The TROPICAL AGRICULTURIST MONTHLY.

Vol. XV.] COLOMBO, AUG. 1st, 1895. [No. 2.

NITROGENOUS MANURES AND THEIR EFFECT.

THERE are ten elements absolutely essential for the production of plants. These are nitrogen, hydrogen, oxygen, carbon, sulphur, phosphorus, potassium, calcium, magnesium, and iron. It is to the first-named element (nitrogen) that I wish to call attention, and I will endeavour to show how important it is that we should become well acquainted with it. Nitrogen was discovered by Rutherford in 1772, and is a colourless inert gas, slightly soluble in water. It occurs free in the atmosphere, of which it constitutes 79 per cent, or 11 lb. to every inch of the earth's surface. The nitrogen and oxygen of the atmosphere combine under the influence of electric discharges, nitrous acid being formed, which is converted into nitric acid by the action of ozone or peroxide of hydrogen. It forms several compounds useful to those engaged in horticultural and agricultural pursuits. Ammonia is a compound of nitrogen and hydrogen.

Owing to the complicated changes of nitrogen in the soil, it is of the utmost importance that we should study the natural sources of its loss and gain there if we wish to become well acquainted with the difficult question of soil fertility. How does the soil obtain nitrogen in a natural way? The presence of organic nitrogen which is found in the soil has been formed by the decay of vegetable and animal matter. It is also brought down in rain as organic nitrogen, ammonia nitrates, and nitrites. The amount obtained in this way was determined at Rothamsted to be 4½ lb. per acre per annum. But this varies in different parts of the country. It is estimated that an acre of fertile soil contains from 6.000 to 30,000 lb. of nitrogen in the first 18 inches, but the larger half is in the first 9 inches, and the quantity decreases the deeper we go, 96 per cent. of it being present as organic matter.

From the above it seems that we have an inexhaustible supply of nitrogen in the soil, when our most exhaustible crops (Turnips) only remove about 150 lb. per acre. But probably not more than 5 per cent. of the nitrogen in the soil is in the form of nitrates, and thus available as plant food. Fallow land always contains a much higher percentage of nitrates than land under crop; for instance, the first 27 inches of soil over an area of one acre of fallow contains from 33 to 60 lb. of nitrates; land under crop only contains from 5 to 14 lb. in the same bulk of soil. This shows how quickly the nitrates are taken up by a growing crop.

These nitrates are most abundantly formed during the late summer and early autumn months, when the soil is warm, especially after cereal and other summer crops are removed. Nitrates, it should be remembered, are very soluble in water, and if light sandy soils are allowed to remain bare during the winter a very large proportion of this valuable manure will be washed out by the heavy rains. To prevent this loss some kind of winter crops should be grown, as these take up the nitrates. If the crops are of no other use they can be dug in during the early spring, and will then form a good organic manure which is beneficial to light sandy soils, as it helps to make them more retentive.

I have stated that our most exhaustive crops remove about 150 lb. of nitrogen per acre, and from experiments at Rothamstead it was found that from 35 to 45 lb. of nitrates per acre were washed out of the soil into the drains per annum, making the total loss of nitrogen about 157 lb. per acre in one year. Gardeners must bear in mind that this loss goes on the same in garden soils, and therefore to keep it in a fertile condition we must replace this loss by the application of some nitrogenous manure, such as the following.

Ammonium Sulphate.—This is a compound of ammonium and sulphuric acid. It contains 20 per cent.

of nitrogen, equal to 25 per cent. ammonia. This is the most concentrated of all nitrogenous manures and is very soluble in water.

Potassium Nitrate.—This is a compound of potash and nitric acid, and usually contains 13 per cent. of nitrogen, equal to 16 per cent. ammonia It also contains about 45 per cent. of potash It is a very valuable manure. Any gardener can increase the supply by the following process:—Make a compost heap of vegetable matter, such as garden refuse, and mix with it a fair proportion of wood ashes and lime. The wood ashes, which are rich in potash, can be obtained by burning all fruit tree prunings and hedge trimmings The lime added helps to decompose the organic matter and liberate the nitrogen, which then chemically combines with the lime; but another change takes place by which the nitrogen leaves the lime and combines with the potash, thus forming potassium nitrate. The compost heap must be frequently turned so that all parts become thoroughly oxidised.

Sodium Nitrate.—This is a compound of soda and nitric acid, and contains about 15 per cent. of nitrogen, equal to 19 per cent. ammonia. It is very soluble in water, and contains its nitrogen in a form that can be immediately appropriated by plants.

Peruvian Guano.—This manure varies from 1 to 12 per cent. of nitrogen. It is a more general manure than the preceding, as it contains nitrogen in three forms. 1, As organic nitrogen; 2, ammonia; 3, nitrates, and is, therefore, a more lasting manure.

Dried Blood.—Blood contains nitrogen equal to from 12 to 16 per cent. ammonia, but it is slower in action than any of the above manures, as it has to undergo decomposition before it is available as plant food.

Fish Guano—This is also a slow acting manure. It contains nitrogen equal to from 8 to 10 per cent. ammonia.

Farmyard Manure.—This is the most general of all manures. One ton contains from 9 to 15 lb. of nitrogen, besides other valuable manurial ingredients, such as potash and phosphoric acid.

Animal Urine.—One ton of this from horse stables contains 36 lb. of nitrogen; from cows, 30 lb.; and from sheep, 38 lb. Most gardeners can get a good supply of stable manure, and many persons have noticed the black streams draining away from it. If the value of the fertilising ingredients of this liquid contain was better known it would not be allowed to waste as it does. This is the analysis of it in 100 parts. Water, 82 per cent., and dry substance 18 per cent. The dry substance is made up as follows:—

Ash	10·7	Magnesia .. .	0·4
Nitrogen ..	1·5	Phosphoric acid ..	0·1
Potash	4·9	Sulphuric acid ..	0·7
Lime	0·3	Silica	0·2

It will be seen by this analysis that the liquid contains, in addition to nitrogen, five of the mineral ingredients that are essential for the production of a healthy growing plant; the one not mentioned is iron, but plants only require a trace of this ingredient. And it is usually present in soils. It must be borne in mind that all the manures mentioned, except the sodium nitrate, the potassium nitrate, and part of the Peruvian guano had to undergo a process, next to be dealt with, before they can become available as plant food.

Nitrification.—This is effected in the soil by two micro-organisms (Bacteria). The first, known as the nitrous organism, converts ammonia into nitrous acid; the second, the nitric organism, converts the nitrous acid into nitric acid.

Carbon as organic matter must be present for the existence of these micro-organisms. Air, heat, and moisture are the three things that promote nitrification. It is very feeble at a temp. of 40° F., and ceases ot 32° F. It is, therefore, necessary that the soil should be well drained. If the soil is water-logged the air is shut out, and nitrification ceases, the nitrates present becoming denitrified, with the result that the nitrogen is set free. We must understand that nitrification takes place exactly the same in the soil of the smallest pot, under the gardener's care, as it does in any prepared border, or in the open field. If the soil in pots become waterlogged nitrification ceases, and if allowed to remain long in this condition the roots will perish.

Basic Condition of soils.—Sufficient lime and potash must be present as carbonates or sulphates for the nitrates when formed to combine with, nitrate of lime and nitrate of potash then being formed, and these are the two sources from which all plants obtain their nitrogen from the soil. If any soil is not in a good basic condition it cannot be fertile.

How Plants Obtain Their Nitrogen.—The dry substance of plants usually contain from 2 to 3 per cent. of nitrogen, and they all (except the leguminous plants) obtain it from the soil principally as nitrates. Some gardeners still favour the idea that the foliage of plants has the power of absorbing nitrogen as ammonia from the air, but the most eminent botanists in England and on the Continent have concluded that the quantity obtained by plants in this way is so small as not to be worth considering. We may deduce from this that damping down houses, when closing in the afternoon, with liquid manure, as practised by some gardeners, does not benefit the plants so much as they think. Some, however, consider that the fumes of ammonia are injurious to red spider and other insect pests.

Leguminous Plants.—Peas, Beans, and Clover belong to this family. These plants have some power, not yet properly understood, of absorbing the free nitrogen from the atmosphere. Dr. Paul Sorauer, in his popular treatise on the "Physiology of Plants" (1895), says "As far as our scientific knowledge goes, the leguminous plants can subsist on the nitrogen they take from the atmosphere, while cereal crops, fruit trees, and indeed all other phanerogams, must obtain this substance in some soluble form from the soil. Nitrates seem to be the most suitable form of salt from which plants obtain their nitrogen. Ammonia, which can probably be absorbed in minute quantities even in a gaseous state, is less suitable." It is a fact that leguminous plants can be grown in a soil devoid of nitrogen. These plants do not rob the soil of this element, but act as purveyors of it to the soil.

Why is Good Loam so Valuable?—The first 9 inches of an old well-drained pasture is full of nitrogen, in three forms—nitrates, ammonia, and organic matter. The first 9 inches of soil in 1 acre, if weighed when dry and all roots removed, would contain about 2,250,000 lb. of soil. At 0 10 per cent. of nitrogen this quantity of soil would therefore contain 2250 lb.; but the turf we use for potting has all the roots in it, and these by their decomposition yield a large supply of nitrogen. Clove being a leguminous plant, greatly increases the nitrogen in a pasture.

How is the Nutrition of Pot Plants Effected?—The various composts we use for potting purposes should contain sufficient food for the growth of the plants; but the food in the richest soil can only last for a short time in the limited space of a pot, and therefore we should try to make the best of the soil. It is a common practice when sifting soil to throw out the lumps of turf that will not pass through the sieve. This is a great mistake. These lumps should be rubbed through, as their decay greatly increases the supply of nitrogen to serve as plant food.

When the soil in pots is getting exhausted the plants cease to grow vigorously, the foliage becomes pale, and the plants is weak in the growing point. We must now supply it with food. Soluble artificial manures are generally used where good liquid manure cannot be obtained. Great care should be taken not to overfeed, as this encourages rank growth; young tissues are built up too fast; the plants are not well matured, and when in this condition are more liable to prevalent diseases. Dr. Sorauer says that "the majority of diseased plants he received from gardeners was the result of overfeeding."

I have used tons of chemical manure, and from practical experience I find it better to under than over-feed. If we wish to keep our plants healthy

we should know the composition of the soil we have to deal with; also the composition of manures, and the ash constituents of plants. We should then be able to mix our own compounds to suit plants under our care. In conclusion I may say that of all the elements essential for plant life nitrogen is the most important. It is one of the chief elements of protoplasm, and this is the substance which gives life to plants.—(*Paper read by* Mr. J. Gay, *at a meeting of the Wormley and District Horticultural Society*).—*Journal of Horticulture.*

THE VITALITY OF SEEDS.

In the course of his investigations on the behaviour of matter at low temperatures, Professor Dewar was led to consider the effect of great cold on bacterial life and seeds. Although bacterial life is destroyed by boiling in water at a temperature of 100° C., it can still endure unaffected a degree of cold much greater in proportion. Professor Dewar submitted seeds for the space of an hour to a temperature of 182° C., and found that they afterwards went on putrefying or germinating as the case happened to be. In a moment of scientific inspiration, Lord Kelvin suggested that the first life might have been brought to this planet by a seed-bearing meteorite. But though it has yet to be explained how this meteorite was ever originally equipped with seeds, the discoveries of Prof. Dewar are interesting in a way because they give colour to Lord Kelvin's theory. They show that spores may live upon a planet through long periods of low temperature. The popular press is never tired of trumping up the old stories of the power of mummy-wheat to germinate after long ages of time. Let it suffice to say that these exaggerated estimates of the powers of retaining vitality which seeds possess, have not been substantiated.

In a recent number of that interesting journal, *Science Gossip*, Mr. H. B. Guppy put forward a proposal which we commend to all who are interested in biological science. In his investigations on the dispersal of seeds, Darwin came to the conclusion that a period of twenty-four hours as the limit of time, and 500 miles as the limit of distance, was the most that could reasonably be permitted to the agency of birds in stocking islands with seeds carried either on or inside their bodies. Mr. Guppy suggests that observers should examine such specimens of water-fowl as are common in their neighbourhood in order that we may have more definite data as to the dispersal of seeds and their vitality.

Some observers have testified to the fact that wild ducks frequently carry seeds a distance of perhaps a thousand miles or more, and that these seeds retain their vitality and germinate, sometimes without much delay, at other times after a year or two. We know that the common European species, Xanthium spinosum, has spread over the whole of South Africa, and we are probably right in thinking that the seeds of this plant have been carried in the wool of sheep. Here the seed did not, as in the case of the water-fowl, pass into the stomach of the animal, but there seems to be no reason why birds should not transport seeds in their internal organs across oceans and continents. Modern experiments with the seeds of cereals show that they lose their vitality after ten years at most, and usually much sooner; but much depends on the state of the seeds at the time they are gathered from the parent plant, the mode of preservation, and the influences they may have been exposed to during preservation. Mr. Sowerby, who has, at the garden of the Royal Botanic Society, in Regent's Park, experimented with a variety of seeds of various ages, and produced in quite distinct countries, declares that he has not met with any of fifteen years of age, to his own knowledge, to grow. The most aged seeds he has known to vegetate were those of the Australian Baobab Tree (Adansonia Gregorii), ten years old. One of the most curious cases of the vitality of seeds is reported in the *Journal of the Royal Botanic Society* for 1885. A handful of fruits of Aucuba, taken from a shrub in the gardens at Regent's Park, were planted in a pot in July, 1882; two plants appeared above ground in February, 1883 fourteen in 1885, and two more in February 1886. It may, perhaps, be found that the process of ripening after the fruit has been removed from the parent, especially when buried in moist earth and at a less rapid pace, may account for the difference in time of germinating.

Another point on which more light is wanted is the vitality of seeds after being carried over long distances by winds. Of course, with Cryptogama the matter is easy enough, for we have in the wind an agency capable of distributing spores over long distances; but with phanerogamous plants difficulties arise. Berthelot, indeed, avers that after a violent hurricane he saw an annual belonging to the Compositæ (Erigeron ambiguus), widely distributed throughout the Mediterranean region, suddenly appear at various spots on the Canary Islands, where it was previously unknown. It is probable, therefore, that the seed had been blown across from Portugal or North Africa. How interesting would it be if we could place a mark on certain seeds, and casting them to the winds, find the identical ones in some spot hundreds of miles away from home! *The Adventures of a Seed.* What a sale such a book would have among botanists and biologists!

Darwin's experiments to determine the vitality of seeds in sea-water, the results of which were published in this Journal, do not seem to have been imitated by more recent investigators; but here surely is an interesting field for study. We may perhaps be allowed to quote one of the experiments. Darwin found that out of eighty-seven kinds of seeds, sixty-four germinated after an immersion of twenty-eight days, and a few survived an immersion of 137 days; and in another, that out of ninety-four dried plants, eighteen floated for above twenty-eight days. Combining the results of the two experiments, Darwin concluded that fourteen plants out of every 100 in the flora of a country might be floated by currents moving at the average rate of the several Atlantic currents, a distance of 924 miles, and might, on being stranded, furnish seeds capable of germinating.

While on the subject of the power of seeds to withstand the power of water, it may not be uninteresting to state that it is a well-known fact that the Coco-nut is one of the first plants to make its appearance on coral islands, and it is, according to Sir John Lubbock, the only Palm which is common to both hemispheres. The seeds of the Coco-nut are, of course, well protected against mishaps by the loose texture of their husks, and can float easily on the water. The seeds of the common Duckweed, again, lie dormant at the bottom of the water all through the long autumn and winter, but at the approach of spring they rise to the surface with unimpaired vitality, and germinate forthwith.

Some years ago the British Association took up the question of the vitality of seeds, and instituted a series of experiments, in which Professors Daubeny, Henslow, and Lindley took part. In the Report for 1857 we find a valuable summary of the results of the experiments from 1841 to 1857 inclusive. In the table showing the greatest ages at which the seeds experimented with germinated, we find that the seed of a species of Colutea belonging to the Leguminosæ germinated after forty-three years. This is the only plant mentioned in the list whose seed preserved its vitality for so long a time as forty-three years, though it would appear in general that the seeds of leguminous plants retain their vitality for a long time.

We are unaware that any experiments are being carried on at the present time on this interesting subject; certainly the British Association dropped the matter after the year 1857.

De Candolle in 1816, experimenting with seeds about 15 years old, obtained results which go to prove that the natural orders, Malvaceæ and Leguminosæ excel all the orders examined in the duration of the faculty of germination. Comparing these results with those obtained by the British Association investigations, we find that the longest period a species of Malvaceæ retained its vitality was 27

years. Beside the Leguminosæ, the seeds of species of the following orders retained their vitality after a period of twenty years. Tiliaceæ Rhamnaceæ, and Myrtaceæ. Returning for a moment to the statements mentioned above, as to the powers of different seeds of resisting external influences, we find that cereal grains have been proved by Edwards and Colin to bear a short exposure of 122° F. in water, as well as a dry cold of 70° below the freezing point; while Hemingway, in a paper published in the *Ann. of Nat. Hist.*, 1st series, viii, 317, states that seeds of Elder germinated after being twice boiled in making wine, being present during the vinous fermentation, and remaining for twenty months in the dregs of the cask. *H. C. F.—Gardeners' Chronicle*

TROPICAL AGRICULTURE IN NORTH BORNEO.

COFFEE—COCOA—COCONUTS—PEPPER—GAMBIER &C.

It is always interesting to know what other people think about you, and especially so when the critic is a shrewed observer and a man of practical experience, and for these reasons what Mr. Strutt has to say about us is read with particular attention. It is very satisfactory to find him referring favourably to the growth of coffee, Manila hemp, cocoa, coconuts, sugar cane, cotton, pepper, gambier sago and arrowroot; the growth of these plants that is: as to whether their cultivation is likely to pay Mr. Strutt says there are two ways of judging (1) by the full knowledge of the future supply of other tropical countries and of the probable demand (2) by comparing the cost of production with other places where the particular plant is grown, but it may be better to divide these points under three heads 1 Possible competition, 2 Probable demand, 3 Cost of production as compared with other countries.

We will in the first place consider gambier. This product grows in Malaya only and as it is imperative that gambier gardens should be in large forests and with facilities for cheap transport, there are not many places left, even in Malaya where a conjunction of these two advantages exists. As to the probable demand, a reduction of the present London sale price would cause a large increase of consumption while as to comparative cost of production, we have tens of thousands of acres of the best forest covered gambier land permeated by rivers that facilitate its being put on board the export ship at a minimum of expence; one of the main items of its cost in the Straits is that the forests now have been felled so far inland that the gambier has to be carted over miles of roads, whereas here the carriage would all be by water which is of course much cheaper than the cheapest form of land carriage. The price of gambier was $5.30 in 1885 $6.50 in 1892 and $9 now.

Next, as to sago, the prices of the last three years have caused practicable sago swamps generally to be drawn upon to about their limits of production. The price of pearl sago now is $3.60 per pikul as against $2.50 in 1891 and new uses for sago are constantly being discovered, no falling off in demand therefore need be apprehended, rather the reverse, while the production is limited to Malaya and its islands solely.

Manila hemp has been produced in those parts of the Philippines only that have a suitable climate, and nowhere else at all, and owing to the heavy taxes and other causes at work in those islands, the Philippines have very much to fear from our competition than we from theirs.

With regard to these three products therefore we may claim a portion of a monopoly of supply, while the demand is capable of enormous expansion at a reduced sterling price such as the fall in silver, plus the unusual facilities North Borneo has to offer, entails.

Tapioca though not referred to by Mr. Strutt is the next product we will mention. It can be grown in most tropical countries in the world and it is therefore under the third head, comparative cost of production, that North Borneo would be in a better position than elsewhere; in the West Indies where tapioca used to be largely made the cost of labour is much higher than with us while in the Straits from whence much tapioca was exported some few years ago, increase of population has taken for other purposes a lot of the land then used thereby causing, as in the case of gambier the cost of land transport to be so heavy that it would necessitate a considerable rise in price to make it pay, while in North Borneo the factory could be erected at the mouth of a river and the roots carried there by boat, and subsequently taken by lighter to the export ships side.

Much the same has to be said about sugar; the advantages that North Borneo has to offer for the cheap production of this product are so numerous and so great that it becomes a question whether even at the present phenominally low price, sugar could not be produced at a profit; our cane flourishes with a vigor rarely equalled in any other country, its juice yields saccharine matter of a density in excess of that elsewhere, the labourers' wages are cheaper than in almost any other sugar country, *much* cheaper than in most of them, we cannot be beaten in our transport and shipping facilities, and there is an enormous market in Hongkong where one refinery alone puts through two hundred thousand tons of rough sugar annually. In Queensland last season the simple cutting of the cane and carriage to the mill cost as high as 5/6 a ton which is more than half the entire cost of cultivation, upkeep, cutting and transport to a well situated mill in the Sandakan district, would be.

As to coconuts though they can be grown in most tropical countries yet the actual land most suitable for them is circumscribed and the demand for them grows with the increase of population in the tropics and with the discovery of new uses for their products in Europe faster than fresh trees can be planted up. Singapore exported to Europe last year over Pcls. 800,000 of copra. Coconuts are one of the best paying, steady and reliable plants to cultivate.

As to cotton, the demand for it in this part of the world may be said to be only beginning now, and yet Japan imported 153,000,000 lb. in the year 1893.

It will therefore be seen that with regard to Mr. Strutt's three points we have little to fear from the competition of other countries, that the demand for most of our possible products is steadily increasing, and that we are singularly well situated with regard to advantages for cheap production. It is rather other countries that have to fear us than we them.

As for the "sample" Mr. Strutt speaks of, the sample of sago North Borneo sent forward in 1893 was valued at over $160,000 and this is only an earnest of what we could do with all the products we have mentioned if only their cultivation was once properly started.

Mr. Strutt speaks of crops that take two or three years to produce results, but cotton begins to bear at nine months of age, cane also takes the same length of time to mature, tapioca is an eleven or twelve month crop and gambier a fifteen or sixteen months one.

Mr. Strutt speaks reassuringly as to the health of the country, this is a much misunderstood question. North Borneo is freely acknowledged by those who should know best, its European inhabitants most of whom have had plenty of experience in other tropical countries, to be particularly healthy. It must not be forgotten that the class that has almost exclusively come under the cognizance of Europeans at a distance has been almost entirely employed on tobacco estates, and tobacco planting at the best is not a healthy occupation while under the conditions that prevailed on most of the estates when first started, it was simply deplorable; but all others in North Borneo, employers, natives and coolies alike are healthy enough, as witness the staff of Government Officials.

On the whole therefore we have to congratulate ourselves that we have been visited by so close an observer and one who while friendly is quite prepared to be critical as Mr. Strutt is, for the more keenly everything in connection with the country is looked into the better the facts will show.—*British North Borneo Herald.*

AUSTRALIAN HARDWOODS AND THEIR USES.

(Being the substance of a Paper, read at the Imperial Institute, by C. R. FENWICK, Esq., *A.M.I.C.E., some time Manager of the West Australian Land Company.)*

In the forests of the Australasian Colonies, and especially in those of Victoria, New South Wales, West Australia, Queensland and Tasmania, there is a great variety of excellent timbers, which come under the designation "hardwoods," the chief of which are the iron barks, *(Eucalyptus siderophloia, (E. crebra, E. Sideroxylon, E. paniculata,* and *E. c rugata),* stringy barks *(E. obliqua* and *E. piperita)* blue gum *E. globulus),* flooded gum *(E. saligna),* box *(E hemiphloia),* black butt *(E. pilularis),* woolly butt *(E. longifolia),* black wood *(Acacia Melanoxylon),* beech, banksia, the so-called myrtle, rose wood *(Dysoxylon fraserianum),* mountain ash *(amygdalina),* and two varieties of the Eucalyptus peculiar to West Australia, namely the Karri *(diversicolor)* and the Jarrah *(marginata).*

These timbers are applied to numerous purposes. The iron bark, black butt, and box, are extensively used in harbour-works and railway construction. Iron bark, however, has practically become scarce, as, although there are large areas of this timber in the interior of New South Wales and Queensland, most of the accessible timber has already been cut.

The question has been raised by the Governments of the above Colonies as to the policy of encouraging the export trade in timber, in view of its growing scarcity and of future local requirements.

As regards West Australia, however, no doubt can be entertained as to the superabundance of timber in that Colony; moreover, the climate there is more favourable to rapid growth than that of the Eastern Colonies.

Of the hardwoods of West Australia, *Karri* and *Jarrah* possess the most practically useful qualities, and at the same time, command facilities for transport and shipment, as these trees flourish in vast quantities in near proximity to the coast. They have been used extensively in railway construction, in harbour-works, and for bridges, roof-timbers, ship-building, etc. The opinions of many railway engineers may be quoted, testifying to the strength and durability of *Karri* timber, as well as to its superiority over Baltic pine for railway sleepers.

Among the smaller varieties of timber *Yate (Eucalyptus cornuta)* should be mentioned as a hard, dense wood, somewhat similar to lancewood, adapted for wheel-spokes and carriage-shafts. Its cost, in the Thames, should be from £9 to £10 per load.

The *Jamwood* tree *(Acacia acuminata)* is close-grained and hard, takes a high polish, and merits the notice of cabinet-makers. The *she-oak (Casuarina)* is also worthy of mention as being useful for lighter work, such as panels, wheel-spokes and tool-handles.

The question as to the paving material best adapted to the heavy street traffic of our large towns is one of very great importance; and opportunities have been taken for testing the adaptability of the Australian hardwoods for street-paving purposes. Many of these have been tried, but *Karri* and *Jarrah* assert for themselves a marked individuality; they have been laid in many parts of London and in other towns, and with them the nearest approach to the perfection of street-paving has been attained, the difference between the wear of *Jarrah* and of *Karri* having proved to be inconsiderable. Both preserve an excellent surface under heavy traffic, and they have out-worn soft wood laid near them to a remarkable degree. A pavement of *karri* blocks, laid in the City of London, on a gradient of 1 in 27, has remained dry and not slippery, while the adjoining soft wood pavement, which retains more moisture, was slippery and dangerous.

The Surveyors to the Vestries of St. Pancras and Chelsea, in which districts hardwood pavements have been laid, are of opinion that it is economical to use these blocks for street-paving where there is heavy traffic.

Investigations made by Mr. Thos. Laslett, Inspector of Timber for the Admiralty, into the relative merits of some of the best known timbers, show that Australian hardwoods, when under tensile, transverse and crushing strains, take high rank as compared with British oak, greenheart, teak and red pine. Thus, among seven timbers, *Karri* stands fourth under the heading of tensile strain, and second under crushing strain, and ranks next to greenheart. Under crushing strain the resultant figures are *Karri,* 5·13 tons; English oak, 3·41 tons; *Jarrah,* 3·19 tons per square inch, and blue gum, 3·07 tons. It is to the high resistance to crushing strain that *Karri* chiefly owes its superiority as a paving material. The hardwood pavings preserve a more even surface than those of any other woods, hence they are much more durable. Those of *Jarrah* and *Karri* having lasted at least three or four times as long as soft wood pavements, the cost of relaying and the consequent serious interference with traffic and public convenience are, therefore, very greatly reduced by the employment of those woods.

All hardwood paving should be laid with close joints. A better and more even surface is preserved with closely laid bitumen-jointed blocks, and the objection that space is afforded by wood pavement for the accumulation of foreign matter, is thus reduced to a minimum. One square yard takes 46 blocks, closely laid. The price on railway trucks, in London, for most of the Australian hardwoods is about £6 per load, for large scantling and piles about £7 10s. per load. (A load, 50 cubic feet, weighs about $1\frac{3}{4}$ tons, or $1\frac{1}{4}$ tons ship's measurement, and contains 800 blocks 9 ins. by 3 ins. by 4 ins).

A word of advice may be given to the producer; it is, that more care must be exercised than at present in the selection, cutting, and seasoning of timber intended for the European market. Complaints have been made of samples, that they have been shipped when green, and therefore unfit to stand the ordeal of a voyage through the tropics, the result having been their condemnation at sight. A bad impression, thus created, is not easily overcome.—*Imperial Institute Journal.*

THE CULTIVATION OF COFFEE IN MAURITIUS.

He who would advocate the culture of coffee in Mauritius would probably be looked upon by those who consider themselves to be in the know as a fit subject for Beau Bassin Lunatic Asylum. Yet, on a close examination of the subject, it will be found that the reasons which can be given why the cultivation should not be a success are but few.

We admit of two, and those probably powerful ones, namely, leaf disease (Hemilia Vastatrix) and the havoc that hurricanes might produce.

Although coffee was formerly, to a very limited extent, grown in Mauritius, it was never cultivated; that is to say, it never received that care and treatment which is usually accorded to the plant when grown as an article of commerce. It was left in a wild state: topping, handling, and pruning, if ever heard of, never being carried into practice; in fact it was left in that state which is generally known as Native Coffee.

There is no doubt whatever, that leaf disease does still exist in Mauritius on the few remaining trees that are occasionally to be met with, and, in any experiment that may be made to promote the industry, they ar a brought under cultivation would certainly be, more or less, attacked by it. But it must be remembered tha in Southern India and Ceylon, where the disease was most virulent, it took many years before the tree was rendered too weak to

respond to the efforts of nature to throw out new wood or to mature the crops; and, further, that before this happened, large returns had been obtained from the Estates.

In certain localities, although affected by disease, coffee is still being successfully cultivated in Ceylon, and many planters, afraid that Tea is being over-produced, are returning to their old love.

The supposition is, that even though the trees may eventually succumb to the effects of the disease, a sufficient number of remunerative crops can be obtained to justify the initiatory expenditure.

Unfortunately, there is very little virgin forest left in Mauritius, so that the culture would here be handicapped in respect to soil, from the commencement; but, on the principle, "nothing venture, nothing win," we see no reason why, at suitable elevations, small areas should not be put under coffee on land which has been cropped with sugar cane. The cost would be very small compared with that which has to be incurred when opening up primeval forests in new districts, where the timber has to be felled and cleared away, where bungalows, cooly-lines, stores &c., have to be built and roads and drains have to be made. On very many Sugar Estates all these are already provided. The formation of nurseries, and subsequent lining, holing planting, and periodical weeding, comprise the whole of the absolutely necessary expenditure, until the trees come into bearing.

We are not prepared to say positively, that land which has already been under sugar cane is suitable for coffee cultivation, but we consider the experiment is worth a trial; for if only four cwts per acre be obtained, the return would far exceed, acre for acre, any that has ever been in the past or ever will be in the future, derived from the growing of sugar cane.

How the coffee would be affected by hurricanes is entirely speculative.

Fortunately visitations such as that of 1892 are few and far between and frequently many years elapse without Mauritius experiencing a stronger blow than is annually felt in some of the Coffee districts of Ceylon. There are, at certain seasons of the year, the air has been known to be thick with leaves torn off the trees by the wind, yet, the crop suffered but little In such exposed places, the trees were topped low, from 2 feet to 3 feet, and the plants, when young, were carefully staked. Were this to be done in Mauritius, and wind-belts judiciously planted, there is no reason why the ordinary hurricanes that visit the island should have any more effect upon the coffee, than have the strong winds which prevail in other countries where the bean is grown.

We invite those of our readers and their friends, who are sceptical about the growth of *Coffea-Arabica* in Mauritius, to visit the Experimental Tea Garden at Curepipe, where a small clearing of this species may be seen in a perfect state of health and vigour.—*Mauritius Planters' Gazette.*

AGRICULTURE IN BRITISH HONDURAS.

In continuation of previous information on this subject (*Kew Bulletin*, 1894, p. 97), the following extract is taken from the Annual Report for 1893 (*Colonial Reports*, Annual, No. 116, 1894) on the agricultural resources of British Honduras. It is noticed by the Governor that a valuable impetus has been given to the cultivation of fruit for export by the organisation of a new steamship company by local capitalists Already, owing to this cause, increased applications have been made for the purchase or lease of Crown lands, and better facilities are afforded for the disposal of agricultural produce :—

The principal products of the Colony, in addition to mahogany and logwood, are sugar, rum, Indian corn, bananas, coconuts, and plantains, and, according to the returns supplied, the quantity produced during 1893, and in the case of bananas, coconuts, and plantains, the quantity exported for the same period, are as follows: sugar, 1,490,920 lb.; rum, 57,178 galls.; Indian corn or maize, 47,607 bushels; bananas, 189,420 bunches; coconuts, 1,177,315; plantains, 506,400 fruits. The returns for sugar, rum, and Indian corn cannot, however, be considered as strictly accurate, and probably are very much below the actual quantity produced.

Under bananas, coconuts, and plantains only the quantity exported has been given, as no reliable figures could be obtained as to the quantity grown. In endeavouring therefore, to arrive at an approximate estimate of the bunches of bananas and the number of coconuts and plantains annually produced in the Colony, a reasonable allowance must be made for home consumption by a population of nearly 33,000 souls. There is a very considerable decrease in the quantity of bananas, coconuts, and plantains exported in 1893 as compared with the four previous years, but this decrease is almost entirely attributable to the diastrous effects of the gale of the 6th of July, which wrecked or very seriously damaged nearly all the plantations in the southern districts of Stann Creek and Toledo. Considering the geographical position of British Honduras, the fertility of its soil, and the general salubrity of its climate, it is surprising that the number of its agricultural products as articles of commerce is not greater than it is. By the establishment, through the efforts of his Excellency Sir Alfred Moloney, K.C.M.G., in 1892, of a Botanic Station at Belize attached to the grounds of Government House, an attempt has been made to create a nursery for the cultivation of plants of economic value of all kinds. But the condition of the soil in Belize and the proximity of the station to the sea have proved the present site to be not altogether suited for its purpose, and it is hoped to shortly transfer the Botanic Station to the Stann Creek district, where a site of some 75 acres, admirably adapted for its purpose, has been generously placed at the disposal of the Government by the board of directors of the British Honduras Syndicate. Even at Belize the Botanic Station has proved of value, for, from the experiments made there, and from experience gained of the resources and capabilities of the Colony, it seems clear that the following products, addition to those which have already proved successful, can be grown with advantage and with profit to agriculturists; cacao, castor-oil plants, coffee (*liberica* for the lowlands, *arabica* for the highlands), rubber (*Castilloa elastica*), *Cola acuminata*, cotton, grape-fruit, ground nut, henequen, jute lemon, lime, nutmeg, pine-apple, pimento sapodilla, shaddock, tobacco, and vanilla. In addition to the above the following kitchen-garden products, as they are generally termed, can be readily cultivated: artichoke (Jerusalem), asparagus, beans of various kinds, cabbage, carrot, cauliflower, celery, corn, cucumber, edible gourds, Indian kale, lettuce, melon, mint, ochro, parsley, potato (Irish and sweet), peas, spinach, and tomatos.

Bearing in view the short-sighted policy of depending on logwood and mahogany as the staples for the Colony's trade, it is to be hoped that the oft-repeated exhortation of his Excellency the Governor that the future of British Honduras must depend on its agricultural development will be borne in mind, and that in time this Colony will become, what it is eminently fitted by its climate and fertility to be, the garden of Central America.—*Kew Bulletin.*

PEPPER-RAISING IN CAMBODIA.

The pepper plant, says M. Adhemard Leclere, in the *Revue Scientifique*, is not a bush, as some writers say, but a vine, which has to be supported by a tree when wild, and by a strong stake when cultivated. The author has seen the vines growing nearly wild near Chandoc in Cambodia, where they had been planted by the villagers and left to themselves. They grew vigorously and to a considerable length, but bore only a few bunches of fruit, and that of an inferior quality. An abundant crop of good Pepper can be obtained only by careful and skilful cultivation. The industry thrives in the province of Kampot,

where it is pursued in some twenty villages. At the village of Suam Ampil there are eighty-nine planters, and more than a hundred plantations, containing 48,441 stocks. The plants are propagated from cuttings, which are made about eighteen inches long, and are taken from stocks two or three years old. They are supported by stakes about ten feet high, which are solidly planted in the ground; and are fertilised at the season every year with a special manure, which is composed of eight parts of good soil and one part of pounded shrimp shells. The plants are liable to attack by a minute parasite that destroys their fruitfulness, to obviate which they are treated with a decoction of tobacco. The first crop, but an insignificant one, appears in the third year from planting. A corp of about a kilogramme per stake of two plants is gathered in the fourth year, and the increase continues for eight or ten years. Exceptional plants in good soil may return four kilogrammes per stake; but a crop of from two to two and a half kilogrammes is considered a fair average. Some plants will live fifty years, but they are seldom remunerative after forty years, and, as a rule, a plant thirty-five years old is considered of no further value. The plants bloom in May and June, and the gathering of the crop begins in February. The bunches which have turned red are picked and the others are left for future visitations. The berries are stripped from the bunches and dried in the sun till they are black, when they are packed and made ready for sale. White or grey Pepper is produced by letting the berries get a little riper, and cleansing them from their outside envelopes. In some districts the removal is assisted by soaking the berries in sea-water. One labourer can usually take care of about one thousand stakes.—*The Indian Agriculturist.*

PEACH CULTURE IN THE SIMLA DISTRICT.

We have received from Mr. W. Coldstream, C.S., Superintendent of Hill States, Simla, Tract No. 8, on the advantages of cultivating peaches. Considering that three persons, if not four, were associated in its production we are somewhat disappointed by this meagre pamphlet of six pages, even though we see that it is printed and published for the edification of local zemindars. After describing the advantages of having trees planted round houses, the conclusion is arrived at that the *peach* is the best tree to plant as "it grows rapidly—comes to maturity, or fruit-bearing—in three or four years—is most easily cultivated from the seed and is usually very polific." We are then told that "in very rich soil trees six years old have yielded one thousand peaches each in a single crop," and here at the outset we find ourselves obliged to protest. Any one who has ever tried it, even on poor soil, knows that one can get lots of peaches, but that to get good peaches, not the rubbishy bitter little hard green peaches of the villages, you must obtain the best kinds, must cut off about three-quarters of the fruit when set, must prime carefully and manure heavily, and these are just what the villagers will not do. No doubt, on the outskirts of hill villages, manure of a sort!—is plentiful, only too plentiful, but who ever heard of a native fruit-grower cutting off any of the young fruit to improve the rest, any more than he heard of a native gardener who would of his own accord gather his peas before they were as hard as bullets, or his turnips until they were more fit to give rope-fibre than food?

No doubt, peaches, if only some attempt is made to get good ones, are good things to grow, and even when hard and bitter they make good stew; but there are other fruits as good, such as apricots, Bokhara plums, and, above all, apples. It seems to us that there is no want of fruit trees generally in the North-west Hills, but that what is wanted is improved cultivation and consequent improved quality. Hints on these important matters are unfortunately absent from Mr. Parson's 'directions for sowing and rearing' which we need hardly reproduce, as they contain nothing but what any Forest officers must have known long ago.

We take the greatest interest in the work with which officers like Sir Edward Buck and Mr. Goldstream have identified themselves, but we hope that in future Tracts of the kind, Mr. Coldstream will impress upon his ranas and zemindars the advantages of improvement in quality as much as those of increased number of trees.—*Indian Forester.*

AGRICULTURAL INDUSTRIES—OLD AND NEW—IN MAURITIUS.

In previous issues of our paper, we have commented on Agricultural Industries that we think might be successfully cultivated on a large scale in Mauritius, such as Ramie fibre, Coffee, Tea, &c. We now purpose, briefly, to treat on minor ones, which with proper attention should prove equally if not more, lucrative, acre for acre.

Vanilla.—We hesitate to touch on the subject of Vanilla culture, seeing that Mauritius has for many years held its own in the London and Continental markets against the produce of other countries, and that, in the cultivation of the plant and preparation of the bean, Mauritius planters have never been excelled. This being the case, we would eschew any attempt at giving instruction to a maternal grandparent, and content ourselves by saying that, disappointing as the cultivation of the vine has been of late years disheartening as it is to see plantation after plantation succumb to a disease which has hitherto baffled all attempts at eradication and elucidation, both by experienced planters and scientific men, by selecting either virgin forest or wellgrown coppice, and by planting on live wood which has been freed from excessive shade, vanilla can still be grown to give a handsome profit on the small expenditure this mode of cultivation would entail.

Cacao.—Experience shews that in some parts of Mauritius the soil is well adapted to this culture. The few trees that are to be found in the country are strong, healthy specimens, and they crop freely. It is a tree that should be planted only at low elevations—not more than 500 feet above sea level—and in deep, rich soil; it requires a well distributed rainfall and should be sheltered from the effects of wind as much as possible. The specimens that there are in Mauritius suffered severely from the hurricane of 1892, but the recuperative powers of the tree are great, and in twelve months after that calamity, those referred to were laden with fruit. The cultivation is very simple, and the preparation consists in removing the seed from the ripe pod and drying it sufficiently for transport to European markets.

Banana.—The dovelopment of this industry is sadly behindhand; a surprising fact, considering how freely the tree grows, and the quantity of land there is available for its cultivation. The varieties appear to be but few; whether this be the case or not, it is seldom that any but the poorer sorts are offered for sale. No effort appears to be made to cultivate the fruit systematically; stools are stuck into the ground anyhow, the tree is allowed to grow without any attention being paid to it, and when, or before, the fruit is *pleine* it is cut down and sent to market. In countries where the banana is cultivated for export, the land is thoroughly prepared, laid out in squares and properly drained, irrigation being resorted to when necessary, where water is available. That considerable care is given to its culture is not surprising as steamers of 1000 tons and upwards are often fully freighted with bunches of bananas collected in Fiji and the adjacent islands; these find a ready sale in the Australian capitals. An acre or two of land, near to a railway station, cultivated on systematic principles, would not only keep the wolf from the door, but enable its owner to live in comparative luxury. Apart from its value as a dessert fruit, it has a marketable value in the shape of flour. Not long since a sample of flour prepared from the Moko plantain was sent to London, for which six pence per lb was offered. A 15 lb bunch will yield 3 lb of prepared meal, which at 6d per lb=one shilling

and six pence per bunch. A piece of land, one hundred and twenty square yards in extent, is said to be capable of yielding four thousand pounds of fruit annually. Should this be the case, at the above price, the returns per acre would be almost fabulous. This is a minor cultivation which should commend itself to the attention of small capitalists.

There are other cultures to which we hope to draw the attention of our readers in a future issue. *Mauritius Planters' Gazette.*

SPRAYING FRUIT TREES.

It is generally understood by orchardists having British experience that quassia chips are largely used in preparing liquid for syringing fruit trees. A recent issue of the *Gardeners' Chronicle* contains a series of recommendations by the Board of Agriculture for preparing such liquids. 1. The extract of 7lb. of quassia, obtained by boiling quassia in water, to 100 gallons of water with 5lb. of soft soap. 2. The extract of 5lb. of quassia to 100 gallons of water, with 5lb. of soft soap and five pints of paraffin (kerosene) well stirred. 3. Extact of 4lb. of quassia to 100 gallons of water with 4 lb. of soft soap and four pints of Calvert's carbolic acid, No. 5. 4. Six pounds of soft soap and 2 lb. of finely-ground helleb.re and a quart of kerosene, boiled and well stirred together. This is sufficient for 100 gallons of water.

The soft soap is dissolved in a tub with hot water. The quassia chips are boiled in water and put into another tub. Where paraffin is used it should be well stirred up with boiling soap and water before it is mixed with the cold water. Water-carts or ordinary barrels or wine casks set upon frames with wheels should be brought full of water to where the materials are being prepared, either at the farm buildings or in an extemporised shed with a copper in it, and the requisite amount of dissolved soap and other ingredients added. Knapsack and other hand machines can be used for small apple trees, plum and damson trees, and for filbert and cob-nut trees.

It is important that syringing should be commenced early in the spring. Directly there are signs of infestation the process should be begun. As the hatching out of caterpillars is not simultaneous, but is extended over some days, the syringings must be renewed if necessary.

Some fruitgrowers in several parts of the country have tried the cheap arsenical insecticides used extensively in the United States and Canada. These have not yet been generally adopted in Great Britain on account of their intensely poisonous properties, although from experiments made with them they have been proved to be most effective there.—*Australasian.*

THE KADAMBA TREE.

This tree is indigenous to Ceylon, and is known among botanists as *Anthrocephalus Cadama* (the Kadamba of the Tamils). It has an erect stem with many branches; the flowers, which have a peculiar sweet smell, forming a small globe. The fruit is about the size of an orange: this is eaten by the poor natives in India, while the leaves are given to cattle as fodder. The bark is considered to be of great value as a febrifuge and tonic; its taste is bitter and astringent. The fresh juice of the bark is applied to the fontanelles of children when that soft portion of the head sinks; at the same time a small quantity mixed with cumin and sugar is given internally. The juice of the bark mixed with an equal quantity of lime juice, opium, and alum has been applied with great benefit round the orbit of the eye to subdue inflammation. The tender leaves, when applied in the form of a paste, resolve glandular swellings, and the large leaves prove an efficacious remedy for eczema. A decoction of the leaves is used as a gargle in cases of apthæ and stomatitis. The fruit is considered to be cooling, a destroyer of phlegm and impurities of the blood. The wood of the Kadamba tree is of great economic importance, is soft, yellow-coloured, and even-grained, weighing about 40 lb. per cubic foot. It is used for building purposes in Assam, and may be used as material for beams and rafters, being also good for joiner's work. In Calcutta it is one-third as cheap as mango wood. Kadamba trees grow wild throughout India, and are principally used for fuel. The closely allied *Manjal-Kadamba*, the *kolon* of the Sinhalese (*Adina Cordifolia*), and Nir-Kadamba or Chelembe, the Helamba of the Sinhalese *Stephegyne parvifolia*), are sometimes used by carpenters in Celyon. The wood of the former is extremely fine and like that of the box tree being light and durable, though it does not stand damp well; it is used in Bombay for planting for the floors of houses. The former, which is of a light chestnut colour, fine and close-grained, has also been used for flooring-planks, packing boxes, and similar purposes.—*Indian Agriculturist.*

VARIOUS PLANTING NOTES.

Anthracite Coal *v* Soot As A Manure.—Will you allow me to ask your readers' opinions as to the value of small anthracite coal instead of soot for agricultural use. I am in a position to get quantities of anthracite "duff," *i.e.*, coal not much coarser than sand, at a very small cost; and as it contains over 90 per cent. of carbon, it has occurred to me that I might use it as a substitute for soot. There will, of course, be many of your readers who will be able to advise me on this matter. G.S.H. —*Gardeners' Chronicle.*

Big Orchard.—The largest orchard in the world is said to be that belonging to Elwood Cooper, of Barbara, California. It is a tract of 1700 acres, and contains 10,000 Olive trees, 8,100 in full bearing, the remainder being young trees set out during the past year and a half. Besides the Olive trees there are 3000 English Walnut trees, 4,500 Japanese Persimmon trees, 10,000 Almond trees, and about 4000 other fruit and nut trees. The 10,000 Olive trees yielded 40,000 quart bottles of olive oil last year, which found a ready market at 4s a bottle. The nut trees bore thousands of bushels of nuts, to say nothing of the Japanese Persimmons. Taken in all, it has been calculated that Mr. Cooper's orchard brings him in an income of not less than 750 dols. per acre every year. *The People.*—Ibid.

Agricultural Education in Aberdeen University.—Rev. Dr. Smith, Newhills, Aberdeenshire, convener of the Committee on Education in Agriculture of the Aberdeen University Court, has issued a circular on the subject to County Councils. He points out that the Ordinance of the Scottish Universities Commission, which is expected to receive the Royal assent, and so become law in the course of a few weeks from this date, lays down a systematic course of study for the B.Sc. degree in Agriculture, extending over not less than tree academical years, and embracing, in addition such residence and practical work at a farm as shall be required, at least twelve courses of instruction in the following subjects, viz.:—1, Mathematics or biology (i.e., zoology and botany); 2, Natural Philosophy; 3, Chemistry; 4 Principles of Agriculture (i.e., Agriculture and Rural Economy); 5, Agricultural Chemistry; 6, Geology; 7, Veterinary hygiene; 8, Agricultural Botany; 9, Agricultural entomology; 10, Economic Science as applied to Agriculture; 11, A course in one of the following—(a) Forestry, (b), experimenta physics, (c) engineering; 12, Engineering field work. The above enumeration of subjects presents an adequate field out of which to construct various useful curricula of study, and it will be the duty of the University Court, when matters are more advanced, and when the views of the County Councils have been ascertained, to organise such courses so as to suit the agricultural needs of the northern province. A conference of public bodies interested will take place in Aberdeen University Buildings on July 12 next.—Ibid.

TEA PLANTERS AND COOLIES:

THE CEYLON SYSTEM OF "ADVANCES" AND "TUNDUS."

We publish no less than five letters elsewhere on the subject of the relations between planters and coolies and the evils attendant on the system of heavy "advances" and "tundus." There is a remarkable diversity of opinion on some points; but all the writers—and indeed all who have joined in the discussion during the past month—are agreed in their condemnation of the extent to which advances and the giving-out of "tundus" has beeen carried. In the first place, as to the actual scarcity of labour, taking the plantation districts as a whole, we have the same difference of opinion now that has distinguished the correspondence from the beginning. We had the support of the Chairman of the Planters' Association in saying that in some, if not many districts, there were enough of coolies for the work in hand, while the day was fast approaching when, probably, "short-time" would again become the rule through too much labour. An old friend and planter, however, calls us to task today for hinting at a sufficiency of coolies—he does not know an estate that has been even fairly supplied since November last. But lower down in the same column, another "Old Planter" writing on the same day—says :—"I don't think there is any scarcity of labour in the island; quite the contrary." However, such diversity of observation and experience does not really matter so much now; for, we are, confessedly, on the border of the slack time of the year for flush, and the season when the flow of coolies sets in to the island rather than from it. A practical question arising out of recent experience is, how, next year, to try and prevent so large a home-going of coolies in what are the busiest months for flush with many of the planters, namely March-June; and to transfer this ebb of the tide to the slack months? We suspect the answer of the coolies will be in many cases,—'how can we go travelling with our women and children in the wet monsoon season?' A difficulty this, which might certainly be blotted out by *through Railway communication*.

We now turn to the Advance and Tundu system; and we really think that the discussion is ripening for practical action by the Committee of the Planters' Association. One writer, it is true, says it is no use of the Association passing Regulations, for no one will keep them. But on this line of argument, we might as well be told, there is no use in having District Associations or a Parent Institution at all. We gather from the present and previous correspondence that a large majority of the planting community agree with us that no kangany and coolies going about the country seeking a new employer, should be taken on, unless they can show a satisfactory letter of all being clear with their last employer; and, further, that if such a regulation were generally in force, much of the difficulty about recovering advances would be overcome. If these two propositions are admitted, it surely ought to be possible for the Parent Committee to call on each District body to consider and advise on the wisdom of formulating and promulgating such a Rule as we have named and to take the signatures of the employers in every district who are prepared to abide by it when once it has passed a General Meeting of the Planters' Association. The penalty of a breach after that date should, of course, be that the offender be sent to —— Jericho! And although public opinion is not strong nor united in some districts, we scarcely think that many would care to incur the risk of being regarded as outside the pale and of having their names returned to the Kandy Committee. The difficulty about giving up "tundus" altogether and forthwith, as suggested by "Agricola" is well-shown by "37 years in the country," namely, that a refusal is met by a proctor's letter, "a case in Court," and the loss of all advances through the recalcitrant Superintendent being referred to "a civil case" against his triumphant kangani. We cannot see how this obstacle in the way of abolishing "tundus" is to be got over, unless "J.A.R.'s" practical suggestion of a heavy stamp duty at the outset on every tundu would act as a deterrent?

We are less inclined to call on Government to interfere with the rate of interest—always a ticklish matter—but certainly, cooly and kangani debtors to Chetty and other usurers deserve protection quite as much as the ryots in India, to the extent that the interest claimed should never aggregate more than the principal.—In conclusion, we think it quite time that a Sub-Committee of the Association be named to take the whole subject into consideration and to prepare a circular to be sent to every District Association as well as to the principal Agency Houses if not the Chamber of Commerce, on the lines already indicated.

THE NEED FOR HORTICULTURAL SHOWS IN CEYLON.

(From a Planter.)

From the *Observer* just to hand I find Ceylon is quite famous now-a-days for its varied and numerous festivities, and I trust, Horticultural exhibitions and Flower Shows may be added to the festal programme. Pity it is that the minor industries of Ceylon are not sufficiently encouraged, by occasional Exhibitions, and well supported, and surely if delicate basket work, tortoise shell work, and lace work, were taught at the Orphanages and public Girls' Schools, they would attract visitors and purchasers. A Horticultural and Industrial Exhibition is a quiet but very interesting display, and must not be forgotten in these days of public festivals.

TEA IN THE UPPER CHINDWIN.

The following is the report of Mr. C. W. A. Bruce, Assistant Conservator of Forests, on the tea industry of the Upper Chindwin :—

The following is a list of the villages of the Upper Chindwin which export tea-seeds, the inhabitants of all being Shans :—Kaungkan, Tingin, Kawya, Maungkan, Tason, Onbet, Mainwe, Tamanthe, Malin.

Tradition says that these *kins* (clearings) were cleared and planted some 200 years ago, the seed having been brought from Palaung (Northern Shan States.) No one has ever heard of wild tea in the jungle; the gardens were originally planted for the sake of the leaves, that is, to make letpet, the so-called pickled tea of Burma. However, some 20 years ago there arose a demand for the seed, at first intermittent, but since British occupation steady, and this has now become the main source of income to the owners, though the pickled tea is still collected and made as of old.

The first thing to be done in planting a *letpetkin* is to find the right kind of soil, what is known as myeni, literally red earth. In this soil the tea-tree flourishing to perfection, the look of this earth is very characteristic, being a light red

or buff-coloured friable loam, which occurs in patches, and wherever these patches of red earth are found on the banks of the Chindwin there villages have been built and tea planted. The jungle being cleared of all brushwood and undergrowth, 3 or 4 seeds are dibbled into holes, the holes being either 2 or 4 cubits apart. The object of dibbling in more than one seed is to guard against blanks; however, all the seeds that germinate are allowed to grow. After the plants come up all the tending the gardens receive is periodical clearing of grass, small plants, weeds, and brushwood; the ground is never hoed nor the plants pruned, except when the ravages of a parasite known as *Chibaung* have become so extensive as to kill the portions above ground, the dead tops are then hacked down with the ordinary Burmese dama, the plant at once throwing up stool shoots or root-suckers which in three years take the place of the old cut down plant. The small plants become large enough to give a crop of leaves in 3 years if the *kin* is kept free of jungle, but not till 5 years if the garden is dirty. Seed is borne when the plants are 8 years old, but they do not come into full bearing till 15 years of age, the normal existence of a tree being 40 to 50 years if not attacked by the parasite mentioned above. Some trees last longer than this, but old trees do not bear such good crops of seeds or leaves as middle-aged ones, being usually stag-headed, and are generally cut down, their places being taken by vigorous shoots thrown up by the stools, some stools as large as 3 feet in girth being seen. A light shade is beneficial to the plants and lessens the labour of keeping the gardens clean, as the shade kills out the rank grasses, such as *thekke* &c., which spring up if there is no shade. Heavy rains are not good for the seed-crop, as the seeds drop off without ripening; however, if the seed-crop is poor the leaf-crop is usually good and *vice versa*.

Each house owns from one to three *kins*, the various properties being bound by rough cactus hedges.

As already stated there are two kinds of crops—the leaf-crop and the seed-crop. (*a*) *The leaf-crop*. The trees flush three times a year in—(1) Tagu to Kason (April—May); (2) Wazo to Waganug (July—August); and (3) Tawthalin to Thadingyut (September—October). Of these three flushes the first gives the best leaf and brings the highest prices. The method of plucking is to pluck the whole shoot except one leaf which is left. Thus if there are three leaves in a shoot the shoot is nipped off just below the second leaf. Each owner then takes his crop of leaves and throws it into an iron cauldron full of boiling water; it is left in this water till the leaves turn a yellow colour; the water is then thrown away and the leaves rolled by hand on mats; it is then ready to be sold to traders, who take it away either packed in bamboo crates or in the internode of the *myetsangyc* bamboos (*D. Hamiltonii*). If one wanted to keep this tea it must either be kept buried in the ground or the crates and bamboos must be kept in water. Kawya village which has the largest extent of *kins*, makes on the average 20,000 viss of *letpet* annually. The price at the village for the produce of the first flush is usually R16 per 100 viss, for the other and later flushes R12-8-0 per 100 viss.

The seed-crop ripens in October and November; it is then collected, dried in the sun, and sold to Burmese traders, who come up for it. The trader shoots the seed into the bottom of his boat, the bottom being roughly lined with mats, and then takes it down to Kettha or Tonhe, where he sells it to the native agents of "tea-seed chiefs."

The price of the tea seed on the garden varies from R3 to R10 per basket, but to understand the method of buying the seed one must bear in mind that the trader, always a Burman comes up in January or February to bargain for the seed crop of the following November. If possible, the trader makes a contract that the owner will sell him all the produce of the garden for a fixed sum per basket. Thus in January 1891 the Maungkan villagers contracted to sell all their seed at R5 a basket. The trader then advances on the condition that, if the villagers cannot pay him back in tea-seed, they must pay him 100 per cent. on his money. If the trader cannot get a contract for the whole crop he always manages to make advances for a certain proportion of the crop on the same condition. Thus this year all the villagers of Kawya have had advances on the condition that they pay back next November (in seed), each basket to be counted as R3. Any left after the villagers have paid back their advances usually brings double the contract price. The trader then hires boats and takes the seed to Kettha or Tonhe, the rate of boat hire being from 2 annas to 4 annas per basket, according to distance, at Kettha. He will sell to agents of the tea planter for an average of R17 per maung (a maung=1 basket 10 pyis or 26 pyis). This is practically the end of the business as far as Burma is concerned, as from here it is carried by Chin or Manipuri coolies in baskets, Scotch fish-wife fashion, to Manipur. No tax is collected or any transit dues exacted anywhere along the route. The Chins are said to carry a load of one basket and a quarter, the average weight of one basket being 14 viss, and get R5 to R6 for the journey.

It will be seen that as in most trades the middlemen are the best off and absorb most of the profit. The Burman trader makes, even if he does not go in for the advance system, over cent per cent, and of course his profits are doubled if he does. The Thaungdut Sawbwa has, I am told, petitioned the Government to be allowed to levy transit dues on the tea-seed passing through his State, though on what he bases his claim to the right, I fail to see. No Thaungdut coolies or men in any way are interested in the trade, the development of which is solely due to the Bengalis and Burmans. The Sawbwa's clerk Maung Kyauk Lon, alleges that the Sawbwa used to collect 6 annas per basket in Burmese times; this statement is false, according to every other person I have questioned. The only transit tax the Sawbwa has ever levied was one on boats and rafts passing Thaungdut town; this has of course now been long discontinued and had never anything whatever to do with the tea-seed trade. I believe Messrs. The Bombo Burma Trading Company are experimenting as to the feasibility of sending seed to Assam and Calcutta; of course if they succeed that will settle all matters of transit dues both for Thaungdut and Manipur. I see no reason why the Bombay Burma should not succeed as no care to prevent shaking, the effects of damp or of heat, is taken, any way prior to the seed reaching Manipur, by the present method which seems to be as unscientific as possible, and yot the tea-seed has, as is well-known, a first class reputation in Assam for germinating properties. The tea-seed experimented with, however, I would recommend being bought at any cost in November; the best way, of course, would be to advance money on the following season's crop, this system being the custom; or else only the leavings and old seed which has been lying about can be got, which naturally would not have the same germinating power as fresh ripe seed.

From what I saw of the gardens they were wonderfully healthy considering the little care taken with them, as, with the exception of tho parasite referred to, the tress all seemed clean, vigorous, and full of leaf. I should say tea-planting with European methods would be a great success if only the labour question could be successfully dealt with. That once settled, all a planter who proposed planting in the Chindwin would have to do would be to prospect for red earth, and from my own experience of the forest I am sure I have come across several tracts of similar earth to that on which the tea is grown. I onclose a specimen of the tea parasite.—*M Mail*.

COFFEE, TEA, COCONUTS, &c. IN SELANGOR.

Coffee is the staplo product of all estates in the district excepting the properties of Messrs. T. H. Hill, M. Listor, W. W. Bailey, none of these estates are more than six yoars old. "Batu," "Uganda," and "Setapakdale," together with portions of "Lincoln," "Hawthornden" and "Klang Gates" Estates, to the amount of 2,500 acres (approximately), have been granted only within the past two years.

It is probable that the best planting land is to be found in the Kuala districts. It is more than probable that the Ulu districts contain a greater proportion of land generally suitable for planting purposes. I venture to urge, as I have done before, the necessity of speedily determining, however roughly, what lands must be reserved on account of their metalliferous value and what may be regarded as immediately alienable to agriculturists. All lands in the State are liable to resumption for mining purposes. No great harm is therefore done if stanniferous deposits are found to underlie planted land.

Pepper cannot be grown at any considerable rate of profit at present. It is, however, to be found in a few native gardens, and may be seen to better advantage on Weld's Hill and Batu Caves Estates.

Gambier and tapioca do not obtain in the district.

Coconuts are of course grown in all parts of the district, but are used only as articles of consumption. The largest portion of land applied to their exclusive cultivation in the district is on the Ampang Road, 60 acres in extent, the property of Kok Kang Keas, widow of the late Captain China, Yap Ah Loy.

There are a few fine specimens of the toddy palm (Kitul) on the Weld's Hill Estate.

Nutmegs are to be planted between coffee trees on a portion of Kent Estate. They are a lucrative though risky article of cultivation, in which, owing to the time and care required, a Malay peasantry is neither qualified nor disposed to indulge.

Tea has been planted by Mr. T. Hill on Weld's Hill and Eveleen Estates in small quantities, but with such success that I should like to see it more generally taken up.—*Selangor Government Gazette.*

CORK TREES FOR NATAL.

Mr. Robert Topham has asked the City Botanic Society to import a couple of thousand young cork trees, as the country was particularly suited to their cultivation. The same benefit was to be derived from the bark of the cork tree as from wattle, only that the trees when stripped were not destroyed, but bore another crop in about five years. In Spain the industry already benefited those who had taken it up to the tune of about half-a-million per annum. The suggestion was adopted, says the Natal *Witness.*

TEA IN TABLOIDS.

It sounds somewhat extraordinary, does it not, that so few housewives succeed in making really good tea? But it is undoubtedly true. That is, perhaps, partly the fault of the housewife, but it is still more the fault of the tea. Fresh tea leaves, as everyone knows, have to undergo a process of "curing" before they are capable of producing the beverage with which we are so familiar, and this process is generally by no means thoroughly carried out. In old days, when tea was a luxury, and fetched a high price, only the smallest and topmost leaves of the plants were plucked; but, in the present day, the demand for tea being so universal, and the price so low, planters in order to gain their profits, find it needful to pluck the larger leaves also. Now, the inner portion of these larger leaves is usually not reached by the "curing" process at all, and the uncured parts produce the unpleasant and bitter taste which characterises tea which has been over-brewed, or which has stood for a little while. The presence of this uncured portion can be shown in another way. If you take a good-sized tea leaf, and soak it in water, so that it uncurls, the centre of the leaf will be found to be quite green. But in buying ordinary tea, you pay for this uncured, and consequently useless portion, and also for the midrib of the leaf, which is also useless. There is no reason whatever why you should. If you use "Tabloids" of compressed tea you will succeed in making a perfect cup of tea, since the before-mentioned useless and harmful portions are carefully removed before compression. If comparison be made between 100 "Tabloids" of tea and the quantity of loose tea possessing the same amount of virtue, the economy in bulk will be found to be enormous. Tea "Tabloids" secure economy and uniformity, and prevent waste, and they enable the consumption of tea in the household to be regulated with the utmost nicety. They are very specially adapted for tourists, travellers, picnic parties, &c.—*Colonies and India.*

COFFEE IN THE WEST INDIES.

The following interesting account of coffee planting in the West Indies is an extract from a private letter of a former well-known S. E. Wynaad coffee-planter, which has been placed at our disposal:—

I only got home some three weeks ago having been for a yachting cruise round the West Indian islands, a pleasant way of spending nine weeks of an English winter like this one has been! We went out *via* Teneriffe, then across the ocean to Barbadoes, where we met the cricketers, some of whom I knew. They were, I think, if the truth were known, awfully surprised at the way the representatives of that island walked into them. But they had only just landed after a very rough crossing and were thus greatly handicapped. From there to Trinidad, one of the finest islands of the lot, and so on through the Windward Isles across to Jamaica, Cuba, Bahamas and Bermuda and from there home *via* Maderia, landing at Plymouth on one of the most lovely warm Spring days (only a sample of two vouchsafed) imaginable. England may have its faults, but taking it all round it is a hard place to beat, and every time I get there after having been to other countries I vow I will never go out of it again. To us hardened *voyageurs*, the West Indies in many respects are the same as the East, and one felt annoyed at being considered lacking in wisdom when one refused to rave over the masses of tropical and tangled vegetation as we drove past them, or take an active interest in the glimpses of village life. As through clouds of dust and with the glass at 90° we bumped over bad roads in vehicles built in the year 1, drawn by horses foaled about the same time, it was very like doing the lowest part of your good city, Madras, on a particularly hot day in July. The flora and tropical growth in none of these islands to my mind touch those of Ceylon, and though one sees many new species, one sees a vast number of old friends, though not nearly so luxuriously grown. So when you read Froude's History of the West Indies, keep a salt cellar within reach so as to take a pinch or two of that proverbial qualification, and apply for an author's copy of the *new* edition which shortly will be edited by your humble servant.

Were it not for that terrible scourge, labour, even worse in these islands than with you, there would be, I think, a wonderful opening for capital and English producers, perhaps more paying than that "Golden lode" in the Londonderry mine of which we are all full of now. (I'm a shareholder!) As one sees those miles upon miles of densely clothed hills which run up to 5,000 feet and over on which grow many of the trees that are found on our best coffee and tea land, one notes the lovely "lays" and the abundant streams in every creek and one just longs for a gang of Kurumbers. You might knock down thousands of acres of forest mixed with dense bamboo and undergowth and never come across a ridge or bit of grass. I went to many of the botanical gardens, and most of them had tea and coffee growing in them luxuriously. At Jamaica I was specially struck with a patch of coffee Arabica growing under fig shade. Though utterly uncultivated, unpruned, etc., and grown in what must have been very poor soil compared to that inland, it looked wonderfully healthy and robust. It was "wintering" a bit, but though I looked carefully at the leaves, I could not detect any signs of that fatal "russet" nor trace any marks of *vastatrix* on those gradually yellowing leaves so well-known to us. And shall I own it, for this

felt sad. For I am still an East Indian coffee planter at heart, though out there I have frequently been mistaken for a gentleman! But I gathered comfort when I detected the somewhat slow and laborious work of our old friend the "Borer" and my fingers itched to place my boot against the stump and with my right hand draw the stem to me wondering whereabouts it was going to snap! "Give Borer time," I said to one of the botanical scientists who watched me attentively, "for his work must be done slowly, but when finished it will be done well!!" And like things are arranged often in this world, this man, who doubtless could have afforded me much information on other topics, seemed totally ignorant of this particular grub. As far as I could gather they did not suffer much from "leaf" in fact many of those to whom I talked had not seemed to have heard of it. I hear in St Vincent that land can still be picked up very cheap on Government leases and the American Market is within about 9 days. It was quite like old times to see this "fascinating" tree growing wild all over the place in most of the islands, and were I a younger man I think I would chance the labour difficulty and quietly begin opening—at St. Vincent for choice.

The Assam hybrid tea-bush too grew wild in the Government gardens at Jamaica. The cocoa planters seemed to have caught on to a good crop. To see the robust way these trees grow and fruit is a puzzle. Why on earth won't they do in the Wynaad? For here you see exactly the same *jungle* trees growing side by side with the cocoa trees that we have in Wynaad, where this "peevish" tree utterly refuses to do. I wonder if the Viceroy could tell us! And such a casual cultivation as it is too. The trees are planted some 10 ft. (more or less) apart, and grow to look very much as the rhododendrons do on the Nilgiris, strong and hardy, though perhaps slimmer, and the fine plump scarlet pods as they hang in bunches amid the dark green leaves look most tempting. I believe no manuring has been done to the trees in any of the islands; in fact I went out with a man who had come from home expressly to find out what effects manuring would have in the yield. I do not know if when young the plant requires care, but the estates I saw looked exactly like the surrounding jungle, with the exception that all the undergrowth was cut under the trees, which grew as it were out of grass land, utterly ignorant of the invigorating touch of the fork or mamoty. The wily mongoose was introduced here some years since and the place swarms with them. True, they have destroyed every snake, but they have also killed other reptiles who used to keep down in their turn, together with the snake, many insect pests which now, having Nature's enemy removed, attack the different products of the isle, cocoa included, the revenue of the island losing some £10,000 annually by their ravages. So much for trying to assist Nature! How can we expect better luck if we try to improve the value of the rupee by legislation?

I was greatly struck with the physique of the negroes. One would dread one's Roll Call had we to deal with two or three hundred of these chaps. The gentle cooly I allow thinks himself as good as his master in these days of education, and no doubt in some cases he is, but these go much further and think themselves *better*. No, believe me, there is nothing like travelling to find out the truth of things, and this trip has taught me that India, that place when we were there, at which we used to grumble so, getting up an hour before daybreak so as to get a good start, and then forced to sit up in our long arm-chairs, cheroot in mouth and drink, some of it inside, of the best near our hand, is not half a bad place after all. Granted, if one has been fortunate enough to "marry an heiress and declare a dividend" England is the place to spend it. But should we have missed our chance of becoming a partner in so good a commercial undertaking, there are far worse countries than India, and I often look back with sorrow to those jolly old days which used to be mine—sorrow I say that they have passed. It was jolly to think that your particular way of working your place was a *little* better than your neighbours. Your new horse (just coming on) *had* a turn of speed, wasn't hammer-headed, didn't turn his toes out when he galloped, nor wanted another rib, and that when the rupee just went a leetle lower, say to 9d, you really would go home, and after having spent your store of sovereigns, just place a few in some South African or Australian mine, and coming out with those few sovereigns now taking bags to hold them, get some R25 for each and so be able to prove to your partner that the trip was not an extravagance but a saving.—*Madras Mail.*

COFFEE BLIGHT IN THE HAWAIIAN ISLANDS.

PROFESSOR KOEBELE ADVISING.

From the *Hawaiian Planter's Monthly*, we learn that resolutions have been adopted by the Kona coffee planters relative to the blight, which is reappearing in that district, and creating uneasiness among planters. The reply of the Commissioner of Agriculture, which follows, explains the reasons why the lady-birds have not done the work expected of them :—

The selection of the *Cryptolæmus Montrouzerie* lady-bird for Pulvinaria coffee blight is entirely due to the instructions received from Professor Koebele, who sent this valuable insect from Australia, and in parts of the islands where the lady-bird was sent (with the exception of Kona) the results obtained have been in keeping with his excellent judgment.

Under date of September 3rd, 1894, Professor Koebele writes as follows: "I have written you previously in regard to the feeding habits of the *Cryptolæmus* and *Rhizobius*. You will do best always to select the *Cryptolæmus* for the insects or scales upon the coffee plant, as this is the beetle to destroy the Dactylopids, as well as Pulvinaria and Lecanium, while *Rhizobius Ventralis* will not feed upon the mealy bugs." That the *Cryptolæmus* has done good work on all the Dactylopids and on the Pulvinaria is an established fact, to support which there is abundant evidence.

After the first few broods of these insects had been liberated in Honolulu, several months elapsed before they became numerous enough to enable us to gather colonies and send them to the other islands. Kona was the first district to receive the lady-bird, and the first reports received from there were quite encouraging. Mr. C. D. Miller, manager of the Hawaiian Tea & Coffee Company, writes under date of October 16th, 1894, and speaking of the *Cryptolæmus* says: "The larva of the latter are doing good work on the infected coffee trees, and I believe in course of time the scale will be very scarce." Soon after this, letters were received from Mr. W. Muller and Mr. M. F. Scott, stating that from some cause or other, the lady-birds do not increase; and in another letter Mr. Muller stated that an insect attacked the larva of the lady-bird and destroyed it. From Mr. Muller's description, I recognized this insect to be the larva of the lace-winged fly, a *Chrysopa*, species unnamed. This insect is quite common all over the islands, and is classed as among the beneficial insects. I have bred numbers of them together in the same jar with the *Cryptolæmus*, and with careful observation I have never seen them attack the larva of the latter.

I therefore suggested to Mr. Muller that he was mistaken in his conclusions, and that the true cause of the *Cryptolæmus* not increasing was that the non-breeding season of the lady-bird was approaching, during which no increase was possible. All this was duly communicated to Professor Koebele, and his opinion asked as to the cause of the lady-bird not increasing. His reply is as follows: "The *Cryptolæmus* beetle has its rest during the winter in Australia, when it does not breed, and the same will be the case in the islands; but you will see good work during the summer." This fact has been fully demonstrated in Honolulu. During the summer months the beetle increased to a marvellous extent, and its work on the Dactylopids and Pulvinaria was

truly wonderful; but as the winter months approached, its numbers began to grow less, until during November, December, January and February hardly one was to be seen; and the several blights on which it fed commenced to increase again. At the present time the *Cryptolæmus* is again increasing, and wherever any of the blight is seen, the larva of the *Cryptolæmus* is seen feeding upon it. I have spoken to Mr. Muller and Mr. Scott when they were in Honolulu and stated to them the above facts, and asked them to have a little patience until the summer set in, when there would be good work done by the *Cryptolæmus*. I believe with Professor Koebele that this will be the case.

Your resolutions seem to imply (though I trust such was not your meaning) that I, as Commissioner of Agriculture, had selected and sent to your district the *Cryptolæmus* lady-bird independently and without the sanction and advice of Professor Koebele. If such is your way of thinking, I must assure you that you are mistaken. In all matters pertaining to the entomological work of Professor Koebele with which I have had any connection, I have relied upon and implicity followed his instructions in every particular.

You have done well to express confidence in Professor Koebele, but you are decidedly wrong in believing that he is in ignorance of the state of affairs in Kona. Just so far as I have been informed by the people of Kona, so has he been informed, and a copy of your resolutions will be sent to him by the next mail. He is now in Japan, a country which he reports as being much infected with scales and blights, and it is quite possible that he might find an insect to supplement the work of the *Cryptolæmus* beetle.

Had my duties permitted me, I would have visited Kona and consulted with your coffee planters concerning blights and other matters but I have been quite unable to leave Honolulu. Constant vigilance is necessary in order to prevent the introduction of pests and blights, some of which, if introduced, would destroy the coffee industry in short order. I can assure you that as soon as possible after the arrival of Professor Koebele he will visit your district and do what is possible to relieve you of the blight on your coffee.

Trusting that you will soon be able to see the *Cryptolæmus* at work on the Pulvinaria, and assuring you that anything that is in the power of the writer to help your industry will be done, I have the honor to remain.

TEA SALES IN BOMBAY.

As we announced the other day, an auction sale of Indian teas took place, on Saturday, at the office of Messrs. Grindlay, Groom & Co., of this city. Some of the tea-planters in Dehra Dunn, Kangra, and Kumaon have arranged with Messrs. Grindlay, Groom & Co. to hold periodical sales of their teas in Bombay, and the first such sale took place at noon on Saturday, when four hundred and twenty-nine cases were put up, with the condition that the vendors had a reserved bid for each lot, and that the article would not be sold under their fixed prices. The first lot consisted of forty cases of orange pekoe from the Dehra Dunn Tea Company, for which the highest offer made was six annas and ten pies per lb. Whereupon it was bought in at seven annas per lb. Upon this the wholesale dealers called the attention of the agents to the fact that in Calcutta, where such sales were regularly held, the consignments of teas were sold without any reserve, and that such a course should be followed here so as to develop and promote the new business. But as the agents were determined to hold to their reserve prices, the dealers left the room in a body. However, on the sale being proceeded with, only five boxes of orange pekoe from the Raipur tea estate were purchased by a Persian shopkeeper at eight annas and one pie per lb., leaving four hundred and twenty-four cases unsold. In Calcutta a large trade in tea is done for export to England, Australia, and other countries by the vendors selling their stock without reserve.—*Times of India.*

GAS LIME AS A MANURE.

Gas lime is a waste product in the manufacture of gas. It has not a high reputation, and can be bought at a low figure, and may sometimes be had for carting away. In its fresh state it has an evil smell, and contains sulphuret of lime and other sulphur compounds that give off sulphuretted hydrogen, and are injurious to vegetable life. It is these the farmer who uses it must guard against, and failure to do this brings about disastrous results, but when rightly understood the danger may be reduced to a minimum, for if gas lime is exposed the oxygen of the atmosphere soon destroys the bad smell by changing the sulphuret of lime into sulphite, and finally sulphate of lime or gypsum: in other words, by changing it from a positively poisonous substance to a well-known fertiliser.

In a sample of gas lime from which the water (that constituted about 40 per cent of it) had been evaporated, and that had been kept long enough to be used with safety as a manure, Dr. Voelcker found the following compounds of lime:—Sulphate of lime, 4·61; sulphite of lime 15·19; carbonate of lime 49·40; and caustic lime 18·23 per cent. A substance rich as this in lime compounds cannot fail to be of considerable service to farmers, and in actual practice it is found to have much the same effect as ordinary lime. The crop on which it does the most good are clovers of various kinds, beans and peas, tares and turnips. It is said to cause scab on potatoes, but this is probably only when it has been incorporated with the soil in a fresh state. On grass land it should be spread in frosty weather at a time when vegetation is dormant, so that it may have changed to a mild form before the growth of grass in spring; or, better still, it should be made into a compost with road-scrapings, ditch-scourings, or other refuse, before being applied. It is of great service in destroying moss, heath, acid-loving plants, and certain other useless vegetable growths.

On arable land it should be spread three or four weeks before being ploughed in, and it may be used at the rate of two, three, or four tons per acre. It is said that if applied quite fresh and ploughed in at once, it will destroy coltsfoot, or other weeds that may have taken absolute possession of the soil, and cannot be removed by ordinary means.

Miss Ormerod and Dr. Voelcker recommend it as an almost certain cure for "Finger-and-toe" or "Anbury" in turnips. The latter makes the following interesting statement:—"On visiting the fields where the turnips were effected (by the above-named disease) by wart-like excresences, and forked and twisted into the most fantastical forms, I noticed a spot on which the roots were nearly all sound. On stooping down and examining the soil, I picked up some bits of a whitish-looking substance which appeared to me like dried gas-lime, and I learned afterwards that on this very spot a cart of gas-lime had been unloaded the year before. The chemical examination of the soil on this field showed merely traces of lime; and at my recommendation, the occupier applied a heavy dose of gas-lime which completely cured the evil."

Considering the above, we can come to no other conclusion than that gas-lime is of value to those who can easily obtain it.—*N. B. Agriculturist.*

A CELEBRATED OLD TREE.

Lecturing, last week, before the Royal Horticultural Society, Dr. D. Morris, Assistant-Director of the Kew Gardens, mentioned the presence at Kew of a living branch of the celebrated dragon-tree of Orotava destroyed by a storm in 1867. This was one of the most celebrated objects in the annals of natural history. It was first described—being even then a venerable tree—by the navigators in the early part of the 15th century, and was considered by Humboldt and others to be of extreme antiquity. The specimen at Kew was obtained many years ago and it is, probably, the only portion of the original tree now existing. —*London Times*, May 24.

DYSENTERY AND TYPHOID FEVER AMONG PLANTERS.

Within a very short period of time we have had to record the death of an unusually large number of victims upcountry to Dysentery and Typhoid Fever, the two fell diseases which Europeans in Ceylon chiefly have to dread. We also know that a much larger number of cases have occurred than the public are aware of, in hospitals, hotels, and private houses,—where, if the patients have not succumbed, they have often been at death's door. We have repeatedly warned young planters of the necessity for keeping a careful watch over the water they use, and last week we struck another serious note of warning, for the appearance of which many expressions of satisfaction have reached us. We therefore think the time has come to speak out more forcibly and more plainly than ever, concerning this matter of the greatest importance, more especially as it affects our upcountry friends, the planters. No purer, or more wholesome, water exists in the world than that which issues from the thousand times ten thousand springs on our mountain sides, free as the air that perennially blows over and sways the trees that clothe them; and when a bungalow is built—as every bungalow should be, where possible—close by the source of such a "spring," only the grossest carelessness and indifference can cause such a supply to become the means of conveying disease-germs into the food, or the vessels used for cooking. Yet so thoughtless and unsuspicious are some of the younger men amongst our planters, that older men, with long experience, often have to point out to them very objectionable arrangements in connection with even so pure a supply of water as this. With such a flow, issuing through a short spout from the ground, the rule should be that no open receptacle—neither a low tub nor a reservoir (unless protected), nor a hole in the ground, should be allowed under it, or near to it. A lazy kitchen cooly will often dip his bucket into such receptacles rather than wait for the bucket or saucepan to fill from the pure source; and as an eternal watch cannot be kept, such convenient receptacles are certain to be often contaminated by the people about the place.

But unfortunately the bungalows that exist and were built so many years ago,—as well as many which the exigencies of the case require to be built now—have not been and cannot always be built where this great desideratum of a pure spring of water, exists. Only the other day we heard a planter boasting of the beautiful supply of water to his bungalow, through a spout close to his kitchen door. And truly it was one to make the heart glad, if only it had issued there and then from the ground: but what he knew, but overlooked, and what we noticed was, that it had travelled over a mile by the road side from its source; and in walking along that road quite close to the bungalow, we had observed such things as decided us to be very careful not to drink of that water during our visit. Under such circumstances nothing but covered pipes to convey water from its source will insure it against contamination in an Eastern country. Our late senior, Mr. A. M. Ferguson, once offered a reward of R1,000 to anyone who could devise a satisfactory latrine arrangement for the lines in Abbotsford, and induce the coolies always to use it! Every planter knows how absolutely indifferent Tamil coolies are in this respect, rather, it would almost seem, preferring to be surrounded by an environment of filth than otherwise, and justifying the joke of a planter that a cooly returning home in the dark lifts up not his ears for sounds from the lines, but his nose for the odour saying:—"Ah! I must be near home." Well, no one earned the old editor's reward, and we think the Planters' Association or some of our large Proprietory Companies might safely repeat the offer. Not that we think the solution of the problem requires any special invention, so much as the best way to influence the coolies themselves, in a direction, for their own good, short of Government compulsion to which complexion it may have to come. For, the condition of things not only on the estates, but generally upcountry, has already become so bad as to be beyond further endurance. And it behoves every European who values his own health, and every estate owner, large or small, who values the health of his cooolies, to put an end to vile habits, which, we say without fear of contradiction, have already counted their victims by the thousand, and which are responsible for the serious illness of planters and coolies who are at this moment hovering between life and death.

TEA CULTURE ON THE CAUCASUS.

Professor Krasnov says we have reproduced his opinions and information on this subject, as stated in conversation, very correctly: but there is an addition he made this morning which we deem of very considerable imporance. In his opinion, there can never be large returns of leaf in the latitude and climate of the Batoum district. "The climate," said the Professor, "is mostly like today in Colombo—very moist, with a great deal of rain nearly all the year round, and not nearly enough of sunshine or heat to induce such flushes of leaf as I see gathered in Ceylon and India." He likens the climate on the side of the Black Sea to what is experienced in India at 8,000 feet above sea-level "and there," he added, "I find planters do not cultivate tea—it is beyond the paying limit."

The courteous and very intelligent Professor—whose home and university are in one of the richest provinces half-way between the Crimea and Moscow—cordially repeated his invitation to visit Southern Russia and see their beet-root culture (for sugar), wheat, fruit, &c.; and he added the best route is by steamer from Alexandria to Constantinople and thence by a first-class Russian line of steamers to Batoum.

THE INDO-CEYLON RAILWAY AND THE COOLY SUPPLY:

HOW TO SAVE 650,000 DAYS OF COOLY LABOUR.

It is quite amusing to us to observe the crass ignorance displayed about the connection between our Labour Supply and the construction of an Indo-Ceylon Railway. Let us take the very a-b-c. of the connection between the two, of which our local contemporaries are either ignorant, or else which they deliberately keep out of sight. At present some 35,000 to 45,000 coolies travel down the North road every year after a long journey through Madura and the crossing to Pessalai. In this way, it is not too much to say that from ten to fourteen days of work are *lost* both to the coolies and the planters. Now allowing for the risk of a proportion of the number having to pass some days in quarantine

in the Cooly Depôt—North of the Kelani river, or wherever it might be situated—we think we are safe in taking ten days for 40,000 coolies arriving by the Northern route as a very moderate average reckoning for the total loss of time. This will give us 400,000 days which an Indo-Ceylon Railway is likely to save to coolies and to planters. This means, to be again on the safe side the placing of R100,000—*one hundred thousand rupees* at least—into the pockets of the laboarers and giving to the employers, the equivalent of an addition to their total cooly force of from 1,600 to 2,000 coolies. These great advantages derivable from the construction of an Indo-Ceylon line are patent and are in the very front of the undertaking. Nor should the saving of time in travelling back to Southern India be lost sight of. Quite so many coolies do not travel by land to the North as come in that way; but 25,000 may be taken for the departures and we have then a further saving of 250,000 days' labour or R62,500 to the coolies whose one great object in coming to Ceylon is to gather in as many rupees as possible to carry back to their villages.

As for the doubt cast on the opinions or desires of Mr. Edward J. Young, it is to us, who know how enthusiastic Mr. Young is about the early construction of an Indo-Ceylon Railway, perfectly absurd. Mr. Young did everything in his power to interest the Ceylon Government in the project and was woefully disappointed when he found that our present Governor received the scheme with disfavour. However he secured the publication of all the papers in the possession of the Government together with a preliminary Report from Mr. Waring and an expression of opinion on the part of the Resident Engineer for the South of India Railway. Moreover, Mr. Young hoped while in England to increase the interest felt there in the proposal; and we feel sure nothing will delight him more than to find the way made clear for the early consummation of a Railway union between this island and the opposite Continent.

As for the time when this important undertaking should be taken in hand, the late Duke of Buckingham—one of the shrewdest and most practical of British administrators—would fain have seen a commencement made twenty-two years ago and Sir Wm. Gregory bitterly regretted he could not put his hand to the work, while he intimates in his autobiography that had Mr. Kyle's scheme for a steam-ferry come before him at the outset, the would probably have been able to stat the Duke's proposal. At any rate, with an influential Syndicate now in existence, whose one object is to promote this Indo-Ceylon Railway, is it not rather absurd to be told that the proposal should be relegated to some unknown limbo of the future! In answer to Mr. Caine, Mr. Sydney Buxton intimated that "any well-considered scheme of railway extension (in Ceylon) which may be brought (by private enterprise) to the notice of the Secretary of State will receive attention." We trust this may encourage Sir Geo. Bruce and Mr. Shelford to lay a formal proposal before Lord Ripon. They have already secured the consent and full approval of the Indian authorities, Mr. Fowler being understood to be especially favourable to their project, and the sooner the Engineers formulate a scheme of their own—say to connect Manaar and Colombo by a metre-gauge line—for the consideration of the Secretary of State for the Colonies, the sooner will they get a distinct pronouncement by the local as well as home authorities, and know exactly how they stand in regard to the Ceylon Government.

One thing is very certain, namely, that only the prospect of interest-and-sinking-fund as well as working expenses being fully covered, is likely to induce the Colonial Office to sanction further additions to the Ceylon Railway Debt for new Extensions. If this be true, as we believe it to be—to judge from information from home—the time would appear to be most seasonable for the introduction of "private enterprise;" and it therefore behoves the Syndicate that has taken the Indo-Ceylon Railway in hand to formulate a proposal without further delay for the consideration of the Secretary of State.

A CEYLON PLANTER IN CALIFORNIA.

We take the following interesting extracts from a letter just received from Mr. T. A. Cockburn:—

The demand for your teas continues here, but does not increase so rapidly as I would like; the great want seems to be some attractive method of Advertising, something out of the common rut, and I need not again enlarge on the tremendous sensation caused by Natives, men and women, appearing on the streets in their striking and picturesque costumes and jewellery, and serving tea in the high class stores free of charge: I have very fully explained how these natives could very profitably be employed between the large Expositions being constantly held in some part or other of this vast country, and of course I include Canada.

I have had enquiries for Ceylon cinnamon and other produce, through a friend connected with a large tea house and general importing business of very great extent, and I furnished him with a list of well-known Ceylon firms and some of their London Agents. I also handed him a copy of your *Overland Observer*, containing a list of those firms connected with Ceylon, so I hope something will come of this enquiry: some 250 bales of cinnamon alone, were required immediately, I don't know if this is a large quantity but presume it is a fairly good order.

I have heard from three only of those to whom awards were given at the late Midwinter International Exposition, as to their wishes *re* medals and duplicate diplomas, and I trust that those who have not yet communicated with me, will do so as soon as convenient, as the authorities would like all matters connected with the Exposition, disposed of as soon as possible now.

THE RUSSIAN TEA COMMISSIONERS IN CEYLON: TEA CULTURE NEAR BATOUM.

The Russian Commission sent out to inquire into and report on the cultivation and preparation of tea in the East consists of four members. But it does not seem to be considered requisite that they should travel together. We have already referred to the visit of Mr. Klingen and the interest he took in our Colombo tea sales, as well as in tea cultivation and preparation upcountry. Two other Commissioners, Mr. Simonsen and another, devote their attention chiefly to preparation and machinery and they have also been taking notes in Ceylon, feeling that nowhere have factories been more fully or admirably fitted up than here. They will probably be back in November to decide on what machinery they should recommend for the Caucasus. But meantime, they feel, that the Ceylon and Indian system of fermenting and firing do not give the teas which are desired in Russia and they think they can learn more under these heads from the Chinese. And so all three have gone off to the Far East.

Meantime, we have had a call from the fourth Commissioner, M. Krasnov, Professor in Charkov University, a learned Ethnologist as well as Naturalist and an authority on Soil and Cultivation,

Professor Krasnov, true to his tastes, first visited our "Buried Cities" and then he passed to the Bintenne country to see something of the Veddahs, taking photographs as convenient. He travelled back to Colombo through Uva and Nuwara Eliya and on the way saw some of our tea country and factories. He is impressed with the careful system of cultivation and preparation observed in Ceylon, and thinks if we could only adapt our teas a little more to Russian taste—less fermenting and firing—that there should be a large demand. M. Krasnov says "less fermenting" because experiments made in this direction when he was in the Darjiling district shewed that suitable teas could thus be prepared for the Russian taste; and our visitor is strongly of the opinion that unless there be some such adapting, it will take a long time for our teas to make way with the Russian people. He tells us how some of the leading Russian tea dealers have commenced to "blend"; but also that he and others have had to change their custom because they must have the teas to which they were accustomed and not the harsher and stronger Indians and Ceylons.

Professor Krasnov has very little faith in successful Tea Cultivation to any great extent in Southern Russia on account of the cost of labour, although as he admits the heavy customs duty—about 2s per lb. on tea—should afford much encouragement in a wide margin of protection. He tells us that the soil and climate along the coast of the Black Sea and for a certain distance inland are very suitable for tea. Hitherto, experiments have been confined to the neighbourhood of Batoum. The first attempt was by a merchant who got some tea plants from China. These grew and bore seed and he planted a few acres and M. Krasnov has tasted tea made from his trees. Then came M. Popoff who introduced some Chinese as well as seed and planted up a small garden; but he has never done much with it and apparently lost interest in it. The Government so far has not more than a few acres under cultivation. They may increase this to a few hundred acres if the Commissioners so advise; but M. Krasnov has not much faith in the enterprise spreading. He tells us a British planter (and Indian coolies if he could get leave to take them over!) would be readily welcomed by the Russian authorities and allowed to profit by the "protection" of the 2s per lb. tea duty. But of course, how to get labour—the coolies—is the difficulty.

Professor Krasnov takes a deep interest in Ceylon altogether,—in its varying climates and vegetation—East and West, high and low,—as well as in the past history of the island and people. He hopes to spend some more time here on his return from the Far East. He leaves for China by the M.M. ss. "Natal" now due from Marseilles.

JOTTINGS ON TOUR.

(By a Planter.)

Prices of Ceylon Tea.—The reason for the present good demand for Ceylon common and fine tea is thus explained in a letter received by the last mail: "In order to sell at 1 shilling a pound, the grades under 7d are likely to continue intrinsically dearer than those at 8d to 10d; for although China Congou is selling down to 3½d, the packers can only use a certain small proportion of it for the one-shilling packet. The new season's Hankow teas are being bought largely for Russia at very high prices. Buyers for England have mostly to stand by, as teas costing 6d, are only worth at present prices 4½d in this market."

Weather is a little more monsoonish today. Great complaints of want of water for Factory purposes, are made in many districts. Residents in such cool districts as Dolosbagie, where prickly heat was unknown, are now suffering from that troublesome, if not dangerous, complaint. It becomes a very serious, matter when Dysentry and Typhoid Fever are but too prevalent. I fear the present unhealthy season will not tend to Life Insurance Societies reducing their premiums.

The Immigrant Returns are much pleasanter reading to the Planter, than they were. The totals weekly show a thousand or so to the good.

Tea Exports are not formidable. We shall certainly have rather poor outputs from many Factories when the slack time comes. There is a lot of pruning in arrear now which must be attended to, and when this work has been delayed, it means that the bushes take a long time to recover from the action of the knife. Tea trees, like everything else in nature, require rest.

France is ceasing to be the home of the claret drinker, as I learn from the letter of a Special Commissioner sent to Paris by one of the leading English papers which shows, alas, how spirit-drinking is spreading among the French.

Ceylon Tea Commissioner in America.—Is it not possible for Mr. Mackenzie to rile our American cousins by showing up their little peculiarities. Dickens, who, perhaps, wielded a more artistic pen than even our Commissioner, got into terrible trouble by his American notes. If Mr. Mackenzie would write less, and stay more in America, our cause, perhaps, would flourish better.

The Committee of Thirty, it strikes an outsider, seems to be encumbered with red-tape, and does not seem to vave the power of getting hold of the money that is accumulating in the banks from the collection of the Cess.

TEA AROUND GAMPOLA AND PUSSELLAWA.

In sending us information for our Directory, an old planter writes:—

Very few natives make their own tea. I only know one Chetty that does and he adjoins me. He calls his estate New Angamone, and it is some 120 acres. This is not in your Directory. You have Angamone as belonging to heirs of A. Brown and natives. The heirs of A. Brown have not owned it for years back!

HORTON PLAINS FOR A TROUT HATCHERY.

(From a Correspondent.)

Undoubtedly Horton Plains is where the hatcherry should be. R500 would put up all the necessary buildings &c., and all other plant (not much required) taken from Nuwera Eliya. I believe that there it would be quite possible to raise yearlings. But there should be a European on the spot, or failure is inevitable.

One great drawback with the present arrangements is that Mr. Tringham has too far to go to see the ponds during the night, and indeed during the hatching of the ova, these should be attended by some one with little or nothing else to do. That is of course for say 3 weeks after the ova are put into the trays.

The present ponds are utterly unsuited for *rearing* trout.

The Selangor Plantations Syndicate, Limited, has been registered by Linklater and Co., 2 Bond-court, Walbrook, with a capital of £25,000 in £100 shares. The object is to acquire from H. Huttenbach certain estates, plantations, &c., in the State of Selangor, in the Malay Peninsula, and to develop and turn to account the same in such manner as the company shall she fit. The directors are J. Somerville, A. Kent, and L. Huttenbach. Qualification one share; remuneration, 5 per cent. of the net profits divisible. —*L. and C. Express* May 24.

CEYLON MANUAL OF CHEMICAL ANALYSES.

A recent number of *The Chemical News* has the following review of Mr. M. Cochran's useful volume printed and published at this office :—

A HANDBOOK OF ANALYSES connected with the industries and Public Health of Ceylon. For Planters, Commercial Men, Agricultural Students, and Members of Local Boards. By M. Cochran, M.A., F.C.S., Professor of Chemistry in the Ceylon Medical College, City Analyist to the Municipality of Colombo, Member of the Ceylon Branch of the Royal Asiatic Society. Colombo: A. M. & and J. Ferguson. London: Kegan Paual, Trübner, & Co.; Geo. Street & Co.; J. Haddon & Co. 1895.

This work ought to be highly prized not merely by the classes to whom it more directly appeals, but by every true Briton. Tropical and Subtropical agriculture is a pursuit in which a large portion of our national capital is invested, and engaging directly or indirectly a still larger proportion of our industry. It may claim our attention the more urgently as it is now attacked on various sides. The parasitic fungi and animalcules of tropical regions, the synthetic chemistry of Germany, the development of rival products, and the frauds of our own merchants, are all tending to reduce the most valuable lands of India, the West Indies, etc., to useless deserts. Hence the instinct of self-preservation should urge us to bring all the resources of ch mical and biological science to bear on the questions involved.

To this good task Mr. Cochran here supplies a valuable contribution. He does not attempt to lay down new or special methods of chemica analysi s but gives us results. He gives us, firstly a view of the composition of the soils and rocks, showing us the conditions under which such determinations are to be trusted here supplied it would seem that the soils of Ceylon are very rich in quartz and insoluble silicates. He explains the demands made upon the soil respectively by coffee, tea cinchona, and cacao, and what manures are needed to keep up a supply of suitable plant-food. Unfortunately, as far at least as coffee is concerned, its failure in Ceylon cannot be remedied by any fertilisers, since it is due to a parasitic fungus. This pest is spreading to Fiji, and we fear to Java. Whether a richer manure would enable the coffee trees to resist the enemy remains to be proved, and perhaps chemical research may lead us to some fungoids able to destroy the scourge.

We next pass to cereals, especially rice. The proportion of phosphoric acid in the mineral matter of rice is relatively high. According to the analysis of Kellner, Japanese rice is richer in fatty matter than that of America or of India.

A table is here given showing the average composition of cereal grains as produced in different countries, no Ceylon samples having been apparently analysed. Nor do we find any analyses of Australian or African grains.

As regards the cultivation of rice, the author recommends that it should receive nitrogen both in the form of nitrates and of ammonical salts. We regret to find that there is no analysis given of the drainage-waters from rice-fields. This water is said to be especially dangerous, and it would be important to know if this opinion is well-founded, and if so, whether the mischief is due to chemical ingredients or to the presence of morbific organisms.

The products of the coconut palm are considered at some length. The yearly value of a coconut plantation on good soil is said to be £8 15s per acre. Attention is called to coconut butter, an article recently placed upon the market, and in many respects superior to the margarines.

The tea-crop makes a heavy demand upon the potash, and the phosphoric acid in the soil. There is no special mention of the composition of the soil of the "Mazawattee" estate, which is now, according to advertisers, producing such a large proportion of of the tea consumed in Britain.

The tannin question is not overlooked. The author quotes Mr. Hooper for the statement that the finest teas are those which contain most tannin. A short time ago an attempt was made to depreciate Indian and Ceylonese teas in comparison with those of China, on account of the greater proportion of tannin which the former were asserted to contain. The differences which the patriotic (?) authors so eagerly pointed out seemed due not to any inherent difference in the quality of the tea, but to a different manner of preparation.

Cinchona barks are cultivated in Ceylon on a commercial scale, the principal species being *C. succirubra*, *C. officinalis*, and *C. calisaya*. The proportion of quinine in the *succirubra* natural bark is 1·20 per cent, and the renewed bark 2·73, in addition to cinchonidine, quinidine, and cinchonine.

The cacao grown in Ceylon is chiefly the Caraccas variety, and it is much esteemed for the manufacture of chocolate. Much of it is exported first to America, and thence to Mexico. According to the analysis of Dr. Tatlock, F.R.S.E., it is exceptionally rich in albumenoids and in the characteristic alkaloid theobromine. It is an exhausting crop as regards phosphoric acid.

Into the useful information on tobacco, areca-nuts, arnatto, coca (erythroxylon), cotton, and datura, space does not allow us to enter.

Pepper, opium, indigo, and ipecacuanha do not seem to rank among the agricultural productions of Ceylon.

The latter part of the book is devoted to sanitary analysis. It is remarkable that the only sample of lemonade which came under the author's hands contained a considerable quantity of arsenic! It is noticed that the sender had "merely tasted it"—a fact which raises some difficult questions.

In fine, to all whom it may concern, this book deserves to be warmly recommended.

TEA ON THE NILGRIS.

THE CEYLON IMPORT TEA DUTY.

THE AMERICAN TEA CAMPAIGN.

THE NEW BOMBAY TEA MARKET.

Last month the Nilgiri Planters' Association appointed a small Sub-Committee of five of its members to enquire into one or two points connected with the tea industry. The question of chief interest had reference to import duty on tea in Ceylon, and after due consideration the Sub-Committee framed this Resolution on behalf of the Association :—"That this Association, deeming it improbable that Government would consider any proposal to impose a protective import duty on 'foreign' tea coming into India—and so follow the precedent afforded by Ceylon for many years—informs the United Planters' Association of Southern India that, in its opinion, it is useless to agitate in that direction, but that it is in favour of the Government of Ceylon being approached with a request to remove the present prohibitory import duty on 'foreign' teas introduced into that Island and so to enable Indian tea planters to enjoy in Ceylon privileges which India extends to Ceylon tea-producers." This is a very sensible resolution, in that there is every chance of its producing some result. The matter now rests with the U. P. A. S. I., which must represent the matter in its proper light to the Governor of Ceylon, and at the same same time ask the Ceylon Planters' Association and the Colombo Chamber of Commerce for their support. The Sub-Committee, already referred to, at the same meeting as the foregoing Resolution was passed at, placed on record that it was unanimously in favour of supporting the Indian Tea Association. With that view the Honorary Secretary was asked to find out in what manner (whether by acreage or per pound of tea turned out) subscriptions were levied from other bodies joining that Association. It was further agreed that when this information had been received, an enhanced subscription should be levied (per pound of the produced or otherwise) with which to defray the expenses of directly pushing Nilgiri teas in other markets. We are glad to find that the Nilgiri planters are not going to stand aloof from the American campaign. Money is needed, and as whatever good is achieved must affect the whole industry

in India, it is only right and proper that all should pay their quota. We notice that a special fund is to be formed in order to directly push the sales of Nilgiri teas alone. An attempt is now being made to conduct tea sales in Bombay.

There is so far as we can see, no reason why a market should not be formed in Bombay. There must be a good demand for tea in that city, both for Home consumption and for export, more especially to the Persian Gulf. At first there is bound to be some difficulty in opening up a new business like this, and the seller will have to make some concessions. In this direction a local fund such as the Nilgiri Planters' Association proposes to raise might be of great service.—*Madras Mail.*

TEA-SWEEPINGS.

TO THE EDITOR OF *Fair Play.*

Dear Sir,—Referring to your article in *Fair Play* of the 10th inst., headed "An Important Question for the Tea Trade," we disposed of our tea-sweepings and damaged tea the seasons before last to a Hamburg firm; previously and since we have burnt all; but your return puts our quantity down as 40 tons, whereas it was composed of ship or country-damaged, 4 tons 10 cwt., sweepings, 19 tons 1 cwt., or 23 tons 11 cwt, in all, which equals a loss of one and one-sixth ounce per half-chest of tea landed and worked here during the season in question; and as we land more Indian tea which has to be bulked than the Dock Companies, or any other wharfinger, it is fair to assume that your returns are all wrong, and, so far as this wharf is concerned, incorrect. The Customs take the gross weight of every package of tea when landed, and the same weight has to be brought to the scale at final weighing, so that duty is paid on the net weight of tea as landed, consequently no loss through sweepings is caused to the importer or revenue. If loss is caused it must be through bad stowage, defective condition of chests, or bad working. By checking the landing weights with their invoices importers can easily see if they have any cause of complaint against the landing, housing, and working their teas in this port.—Yours truly, BUTLER'S WHARF, LIMITED, HY. LAFONE, Managing Director.

Southwark, S.E., 13th May, 1895.

THE ORANGES OF JAMAICA.

THE BEST OF THE FRUIT GROWS WILD.

(*From the "Weekly Times," of New York.*)

In the month of February, 1894, the island of Jamaica exported 164,800 oranges. In the month of February of this year the exports of this fruit amounted to 5,752,150. In February of last year Jamaica's great competitor in the orange trade, Florida, enjoyed ordinary weather. This year found Florida ice-bound or frostbitten. It was Jamaica's opportunity, the greatest it has ever had, and how well it has improved it the foregoing figures show.

WHAT JAMAICA CAN DO.

What Jamaica can do to fill the gap made by the frost in Florida is indicated by the figures quoted. Yet it could have done a great deal more. When despatches from New York reported a steady demand for Jamaica oranges, the fruit was said to be rotting on the trees in the Parish of Manchester, from which the finest oranges grown in this colony come.

WHAT JAMAICA NEEDS.

"I know it," said the Jamaican, placidly.

"What we want here is American money, and enterprise, and push,"—which is as true as the truest kind of Gospel. But this fact should be borne in mind, and it is of the utmost importance to orange growers who are hoping to buy or lease groves here. Orange growing in Jamaica is not a business in itself. It is incidental to other labor, and not counted as a specially profitable industry. Strictly speaking, there is not an orange grove, as the Florida grower understands the word grove, on the Island of Jamaica. Oranges grow wild here. As nearly as I can learn, the only cultivated orange trees on this island are owned by Mr. J. P. Clark, the Custos of Manchester, and I was told last night by an officer of the Colonial Government, whose duties make him familiar with the agriculture of the colony, that the cultivated trees had not done as well as the wild ones. The owner of a farm or property of, say, 1,000 acres, no more thinks of putting it all into oranges or relying exclusively on that fruit, than a market gardener on Long Island would devote all his energies to lettuce, and let the rest of his garden take care of itself.

The Government owns nearly, if not quite, 200,000 acres of land on the island, and much of this is well suited to orange growing. This land is sold at public auction. Any man may pick out a piece of Crown land he would like to buy, and notify the proper authorities. The land is then advertised to be sold at auction. On the appointed day the would-be purchaser appears and offers a certain sum. If the Government is satisfied with the offer, and there are no other bidders, the offer is accepted. If there are other bidders, the highest one gets it. Land sold in this way costs from $1 to $10 an acre. The dollar-an-acre land is generally rather inaccessible, the only road to it being a sheep path. The higher price represents land near a high road. To clear wild land, simply to "brush" it, costs from $5 to $8 an acre. Young orange trees can be bought at the Botanical Gardens.

Intelligent men here do not advise Americans to come here with the sole idea of growing oranges. Come to Jamaica and look around they say. Find the land you want, and buy it. If it will grow oranges, it will grow coffee and cacao, and a variety of other products. Many of these are far more profitable than oranges. Fruit-growing in Jamaica has proved remunerative even with old-fashioned haphazard methods. Backed by American enterprise, energy, and intelligence, it ought to be an excellent lent investment.

THE MAHAOUSA TEA COMPANY, LIMITED.

Directors: W. L. Watson, Esq., S. Boulnois, Esq., A. Bryans, Esq. Offices: 45, Leadenhall Street, London, E. C. The following is from the report to be submitted at the sixth ordinary general meeting:—

The crop amounted to 148,287 lb. (an increase over 1893 of 4,989 lb.), and this has realised £5,301 0s 7d, or say an average of over 8½d (8·59d) per lb.; 1d more than last year. The expenditure amounted to £3,652 17s 9d (the expenditure at the estates being R45,844·45, or at exchange 1s 1⅝d—£2,602 12s 8d.) The average cost per lb. was therefore 5·91d. The profit on the year's working amounted to £1,722 10s 1d, and this, after making an adjustment on account of previous year, and allowing for manager's commission, interest, &c., leaves in profit and loss account a balance of £1,642 11s. 11d. Out of this the directors have paid a dividend at the rate of 10 per cent. per annum for six months, £607 10s. This leaves for distribution £1,035 1s. 11d. And from this the directors recommend a final dividend at the rate of 10 per cent. per annum, absorbing £607 10s.; and leaving a balance to be carried forward of £427 11s. 11d. The total dividend for the year will thus be 10 per cent. The estimate of crop for 1895 is 155,000 lb., and the estimated expenditure at garden is R43,027.

COCOA.

Mr. Alexander Leckie, St. George's House, Eastcheap, E. C., agent for Van Houten & Zoon, gave some interesting evidence last week regarding the cocoa trade. He stated that of the 2,500,000 lb of prepared cocoa annually imported into the United Kingdom, over 2,250,000 lb. comes from Holland, and more than half the total imported is Van Houten's cocoa. The process for making this soluble cocoa is not patented, but is kept secret. An essential part of it is the removal of a portion of the fat from the seeds. Fifty per cent is the average, and Van Houten's contains between 26 and 33 per cent. The witness was examined at great length regarding what the public consider cocoa to be and from his experience he said would not recommend any prohibition of the sale of mixtures of arrowroot, cocoa and sugar, or of soluble cocoas. He was also questioned as to how the latter are prepared, and as to the addition of alkali. Replying to the latter, he said there was no cocoa in the British market which contained any alkaline substance whatever. It could not contain alkali without spoiling the cocoa.

Mr. Leckie was then questioned as to the desirability of the standard for cocoa, and as to the law in foreign countries. He explained that Belgium has passed an edict declaring that cocoa which had been deprived of part of its fat could not be sold as genuine cocoa, although it might be sold as cocoa-powder. It further stated that cocoa which had in it any increase of mineral constituents whatever should be called *alkalinise*, and if there was more than 3 per cent it should not be sold. It was to have come into force on April 1st this year, but he had heard nothing of it. There had been no prosecutions. Van Houten had a large trade in Belgium, and they had taken steps in the matter, and had put the case before the Ministry, and had asked them to take steps to say whether the edict applied to Van Houten's cocoa. The Belgian authorities had issued an explanation which showed that *alkalinise* applied to free alkali.—*Chemist and Druggist*, May 25th.

CEYLON TEA IN AMERICA.

We have received a long letter from Mr. Elwood May on the subject of his revived "Ceylon Planters' Tea Company" in New York and the advantage of our planters backing up his work of advertising and distributing their teas. Mr. Elwood May must understand now finally, that the day for the Ceylon planters supporting any Company or individual separately in the tea-trade is altogether over,—that their money (the Cess) is meant to be spent for the benefit of all dealers in Ceylon tea in America,—and that (for good or evil), to Mr. Wm. Mackenzie as sole representative and Commissioner has been delegated all power under certain instructions from the "Committee of Thirty." It will be therefore a mere waste of time to address letters to Ceylon on this particular subject.

Another correspondent expresses his great surprise at finding that Mr. Blechynden, the Agent for the Indian Tea planters, has been empowered by Mr. Mackenzie to sell or give out Ceylon tea but without distinctive Ceylon labels, so that India gets credit for a tea much better suited to the American taste. This seems a grievous offence in the eyes of our correspondent and especially for the reason that the Ceylon planters so emphatically refused to unite with their Indian brethren at Chicago. We are not going to defend the consistency of our planters; but otherwise to us it seems a small matter which country gets credit so long as Indian and Ceylon teas supersede China's and Japan's. Let it be all India, or all Ceylon, yet both countries equally benefit by the relief to the London market.

Thirdly, we have an interesting letter from Miss Anna Ballard, the well-known lady writer, who lived for some time in Ceylon and whose services we know, Mr. Mackenzie wished to utilize, in writing descriptions of Ceylon tea plantations, preparation, &c., &c. for the American press. Miss Ballard adds:—

"I have just obtained a good point from a Scotsman, New Zealander of 14 years, on a visit to his relatives in Chicago and Scotland. He told me that New Zealanders prefer the Ceylon tea to Indian. They like the Ceylon tea's flavour and delicacy. They find the Indian tea rather strong. He said that Ceylon tea needs no pushing there; for New Zealanders have already adopted Ceylon tea to the exclusion of all that is raised in any other country,—anywhere."

LIBERIAN COFFEE IN CEYLON NOT ECLIPSED.

(*From a Kandy Correspondent.*)

From time to time I observe statements of marvellous growth and bearing powers of Liberian Coffee in the Straits, Sumatra, Travancore, Borneo &c.

The general effect of such reports is to show how degenerate Ceylon is by comparison. The flavour of brag is upon all of them.

The last I saw was that on a 20-month old clearing a Liberian tree had attained the height of 58 inches and a spread of 50 and one of 60 inches with a spread of 54 inches.

The paragraph ended with the very shrillest of Cock-a-doodle-doos.

In reference to this, my attention was called to a clearing of 18 months old in Matale. The highest specimens were 6 feet 3 inches high and 5 feet 3 inches spread—wholly beating the size of those mentioned as something very extraordinary in the Far East.

I do not think that correct impressions are conveyed by taking measurements of isolated trees in clearing.

I wish I could elicit from other growers of Liberian Coffee whether my belief is shared by them as to any improvement in Liberian Coffee from its acclimatisation here, and whether it is not a much earlier bearer than it used to be. The cultivation has been going on now for some little time and we should be hearing something about the new openings unless the silence is that of people who have found a good thing.

[As one indication, we had a planting visitor from a high district the other day who said he was going in for a Liberian Coffee clearing in the lowcountry forthwith.—Ed. *T.A.*]

CURRENT NOTES.

(*By an Old Planter long resident in a Northern District.*)

The last *Observers* just to hand are very interesting to me; first of all and of most importance to the Ceylon Tea Planters we have the

TAMIL LABOR QUESTION

brought before us full of all sorts of complications and puzzles. To meet the present scarcity of labor on many tea estates in Ceylon, I would venture to suggest

FREE STEAMER PASSAGES,

for a *few months* only; some Companies joined by sundry estate proprietors might make private arrangements to convey coolies free to Colombo from Tuticorin to their estates; small steamers might be employed to bring these coolies: and the present general arrangements need not be in any way interfered with. There *are estates and estates* in Ceylon. Some tea estates will always be favourites, with the Tamil cooly, others quite the reverse, except the Superintendents hold out

SPECIAL INDUCEMENTS

for the cooly to locate on them. Roomy and solid and well-built lines, small gardens allowed, and encouraged, and, more than all, *all* the protection to the working cooly the superintendent can possibly give him, by keeping *his account in the advance* book in detail and saying practically to his kangany "*Hands off*, no unjust or extortionate interest on this estate if you please." Some tea estates are healthy for the cooly; others quite the reverse—some are steep, rather so!! Others level, and easily worked and greatly liked by

the cooly men and *women* and boys: some get better rice than others, some have *long rice transport* which coolies detest, and abominate; where can you draw THE LINE, I wonder?

IMPROVE THE CONDITION OF THE ESTATE

for the Tamil cooly, make it more comfortable and he will be quick to find out the benefits you have secured for him and flock to the To-tam, if it is not most unhealthy for him to live on. The present ancient kangani system is welded into all the Tamil Labor Ordinances of Ceylon and is an Institution too strong and vigorous, to be roughly handled,—though perhaps it might be modified in various ways. Finally, this I will say: that coolies are keen observers, and will spread reports quickly—too quickly sometimes—on the Coast, respecting the advantages of various tea-districts and various estates; and whether they are protected by the Dorai or not from the grip of the kangani.

And now to change the subject as it were: I read your recent remarks in *Observer* and can say there can be little doubt that

LOW-LYING SEA LANDS IN THE TROPICS

are often *very unhealthy*. I know this from bitter *experience*. Take the mangrove swamps of the West India Isles, real hot-beds for fever and ague; even a fringe of mangrove swamps washed by the tropical sea-tides will produce fevers of various kinds. The fact is the fermentation *that at times* takes place under the shade of the mangroves and the fetid smell beneath the trees is the *true* cause of the miasma that rises for these swamps during certain months when the winds blow inland, and even if a Planter resides at an elevation and above these lowlying sea water swamps, at certain times of the year, he is liable to malarial fevers and kindred complaints; and coolies also. There is a spot only some 4 miles from Eastern Haputale where malarial fever abounds, most of the year—a veritable grave-yard for the Sinhalese and Tamil cooly labourer. What is the cause of it. Fever laden winds from *Wellaway* and the lowlying country—all around *that village or town* in fact—all the country covered as it is with scrut to Hambantote is feverish and most unhealthy.

CEYLON TEA IN AMERICA.

THE AMERICAN TEA COMMITTEE OF THE INDIAN TEA ASSOCIATION

met some members of the Tea Committee of the Ceylon Association in London on the 2nd May, to discuss a proposal that the pushing of Indian and Ceylon teas in America should, to a certain extent be done conjointly and not in opposition, Mr. Mackenzie, the delegate sent by the Ceylon Planters' Association to America, having reported that he thought it would be possible to work together for the benefit of both countries and that working in opposition was, in his opinion, distinctly opposed to the benefit of both.

It was pointed out that the subscriptions from India would only amount to about £3,000, whereas the funds to be devoted by Ceylon to the same object amount to about £7,000.

After a general conversation as to the feasibility of the plan, and all those present having signified their approval of the idea, provided the details could be satisfactorily arranged, it was left to Messrs. W. Mackenzie and A. Bryans to draft a proposal to be submitted to the full Committees of both Associations in London on Monday, the 6th inst., it being understood that, if such scheme commended itself to the London Committees of the two Associations, it should be transmitted for approval to the Calcutta and Ceylon Associations with a strong recommendation from London for its adoption. The chief points are as follows:—

(1) That both Associations should contribute £2,500 each towards a joint fund to be used for advertising the teas of both countries in America.

(2) That, with a view to saving expense, these funds should be administered by one Commissioner, to whose maintenance in America the Indian Association should also contribute £500 and the Ceylon £1,000.

(3) That the nomination of such Commissioner should be left in the hands of the Ceylon Association, but that the appointment should be subject to the approval of the Indian Tea Association.

(4) That a small Committee of business men in New York (not necessarily connected with Tea) should be appointed, if possible, to advise the Commissioner as to the best way of administering the funds at his disposal and carrying out the proposal for advertising British grown Teas.

N.B.—The object of this Committee being to gain for the Commissioner the experience of business men in America, and to save time by avoiding the reference of matters of detail to London and Ceylon, it was thought that the Commissioner's hands should be as free as possible to carry out the work subject to the advice of this New York Committee provided:

(*a*) That he worked for the interests of both countries and

(*b*) That the money was spent on the advertisement of the Teas of both countries.

(5) The term "advertisement" is understood in its broadest sense and the Commissioner will be empowered to advertise the Teas on the lines already adopted, viz:

(*a*) By attending stores, food shows and other places, with native servants and sales ladies, if he considers it advisable.

(*b*) By the distribution of samples of Teas of both countries.

(*c*) By advertising in the Press, more especially, perhaps, in such towns as he may be holding exhibits of the natives aforesaid.

(*d*) And this is strongly recommended by the London Committees, by subsidising such persons or firms as are already pushing, or will undertake to push the sale of the Teas of both countries, provided such firms are willing to contribute a like amount, or an amount to be agreed upon, to such subsidies, and to render, from time to time, an account of the expenditure so made, it being considered desirable to leave the exact method of how this money should be spent to the firms receiving same, always provided it was spent on advertising, in some form or another, the teas of Ceylon and India, the subsidies to be repeated from time to time, provided the Commissioner is satisfied that they are being properly administered by those to whom they are granted.

(*e*) By such other methods of advertisement as may commend themselves to the Commissioner and be approved of by the Committee in New York.

(6) The Commissioner to have strict instructions to show no bias in favour of the teas of one country over those of the other, and all advertisements, of whatever nature, to be equally fair to both, this being the only basis on which it is felt that such a joint scheme can be worked to give satisfaction to those interested in both countries.

(7.) That a Joint Committee be appointed in London consisting of three members of the Indian Tea Association and three members of the Ceylon Association in London and the Secretaries of each Association, who will have the appointment of the New York Committee and the administration of the funds remitted from Ceylon and India, and will consult together with reference to the reports of the Commissioner, and to whom he will be responsible, as far as the joint funds are concerned, and will advise their own Associations of the progress of events.

(8.) That this joint agreement shall remain in force for one year or until such time as the aforesaid funds have been disposed of in America.

CEYLON ASSOCIATION IN LONDON.

Report of the Executive Committee. For the year 1894-1895. To be laid before the Seventh Annual General Meeting on 10th June, 1895.

The number of names on the roll of the Association is 135, the same as in the previous year.

The year has been uneventful and the duties of the Committee have been light.

The only business before the Committee has been in reference to the Military Contribution of the

Colony. The increased demands, recently made by the Home Government on Hong Kong and the Straits Settlements on this account, aroused much alarm in Ceylon, where the Legislative Council, the Chamber of Commerce, and the Planters' Association with one accord passed resolutions deprecating in forcible terms the imposition of any increased charge on the Colonial revenue for Military purposes. These resolutions have been forwarded through His Excellency the Governor to the Secretary of State, and a request was made by the Chamber of Commerce and the Planters' Association that the President and Committee of this Association should take immediate steps to prevent any contemplated increase in the Military Contribution being enforced.

Your Committee has entrusted the fulfilment of this request to a Sub-Committee consisting of Lord Stanmore, Sir A. N. Birch, Messrs. Rutherford, Shand and Leake, and a lettter has been addressed to the Secretary of State in support of the arguments used and emphasising the unanimity and strength of public opinion on the subject in Ceylon. The receipt of this letter has been duly acknowledged: but it is understood that no decision as to the future has yet been arrived at by the Home Authorities.

By the death of Mr. J. F. Churchill the Committee loses one of its original members, whose long career in connection with the Public Works Department had enabled him on many occasions to do good service to the Colony.

The Committee regrets the loss also of Mr. H. R. Farquharson, M.P. who died recently on his voyage homewards from a visit to Ceylon.

The Report of the Tea Committee and the yearly accounts are appended, as usual, to this Report. A further dividend of 1s. in the pound has been received from the New Oriental Bank Corporation, Limited.

REPORT OF THE CEYLON AND LNODON TEA COMMITTEE, MAY 1895.

The Committee has held three meetings during the year.

The first subject to engage its atenttion was a proposal that Ceylon should take part in the Empire of India Exhibition at Earl's Court, especially for the representation in some form of the Tea industry and for the supply of tea to visitors. As considerable expense would be involved in such a representation and it did not appear that an adequate advantage would be gained therefrom, the Committee declined to take any action in the matter.

Some alarm was caused towards the end of last year by the report to the Association of several cases of serious thefts of tea from packages *en route* from the estates to London. There was great difficulty in ascertaining with any certainty where these thefts were effected, for the packages that had been tampered with came from various firms in Colombo and had been carried by different lines of steamers and landed and warehoused at different Docks and Wharves in London. The Committee addressed a circular letter to the Dock Committee and the London Warehousemen, requesting that any similar instances of serious deficiency of weight on arrival in London might be reported to the Secretary of the Association; and at the same time public attention was drawn to the matter in the Ceylon newspapers. For a time these thefts seemed to have been checked, but during the present month two fresh cases have been reported.

The attention of the Committee was drawn by Mr. Francis Peek, Chairman of the London Wholesale Tea Dealers' Association, to the manner in which the Tea sweepings in some of the London Warehouses had been dealt with, an instance being given where the sweepings had been sent to the Continent and thence re-shipped to London for sale in Mincing Lane. Mr. T. Christy also pressed this subject on the attention of the Committee. The issue by the Customs, under date 4th March last, of London Port Order 11 of 1895, disallowing the exportation of "damaged" Tea from the Bonded Warehouses, will probably put an end to the practice complained of.

In consequence of the prevalence from time to time of rumours of excessive shipments of Tea from Ceylon, circulated, no doubt, with a view unduly to depress the market, arrangements have been made for the despatch from Colombo at the beginning of every month of official telegrams, giving (1) the actual weight of Tea shipped during the past month, and (2) the estimated weight of Tea to be shipped in the current month. These telegrams are circulated immediately on arrival among the Merchants and Brokers interested in the Trade.

The Committee had the advantage of hearing from Mr. William McKenzie, the Commissioner appointed by the Thirty Committee to visit America in the interest of Ceylon Tea, his views on his mission. Mr. McKenzie has subsequently laid before the Committee a scheme, drawn up by him in concert with the American Tea Committee of the Indian Tea Association, for joint action between India and Ceylon in advertising British grown Tea in the United States. A resolution in support of this scheme will be submitted for the consideration of Members of the Association at the Annual Meeting.

In concluding this Report the Committee would say a word of congratulation on the steadily increasing prosperity of the Ceylon Tea industry. It is a very satisfactory feature in the position that, though the prosperity is general and widespread, it has not so far given rise to undue speculation or inflation of values.

Account of Receipts and Expenditure, 1894-95.

RECEIPTS.

		£	s	d	£	s	d
1894							
May 21	To Balance with Messrs. Smith, Payne & Smiths				90	18	11
	To Dividend from New Oriental Bank Corporation, Limited, @ 1/- in the £				6	3	2
	To Subscriptions—						
	Planters' Association	60	0	0			
	Ceylon Chamber of Commerce	50	0	0			
	Members—1891-92	1	1	0			
	,, 1892-93	2	2	0			
	,, 1893-94	10	10	0			
	,, 1894-95	137	11	0			
	,, 1895-96	2	2	0			
					263	6	0
					£360	8	1

EXPENDITURE.

		£	s	d
1894				
	By Secretary's Salary	100	0	0
	,, Rent	80	0	0
	,, Firing, etc.	3	16	0
	,, Room for Annual Meeting	2	2	0
	,, Newspapers, Books, etc	12	19	5
	,, Printing and Stationery	8	2	10
	,, Expenses of Meeting at Imperial Institute	6	9	0
	,, Book Case	10	10	0
	,, Ellam's Duplicator	1	18	0
	,, Telegrams to Colombo	7	15	2
1895	,, Postages and Petties	4	13	7
May 25	,, Balance	122	2	1
		£360	8	1

Examined and found correct, WM. ROLLO,

London, 27th May 1895.

Notice is hereby given that the seventh annual general meeting of the Association will be held in the Council Room, London Chamber of Commerce, Botolph House, No. 10, Eastcheap, E.C., on Monday, 10th June, 1895, at 12 noon to receive the annual report, to elect Officers for 1895-96, and to consider the following resolution:—"That this meeting approves generally of the scheme submitted to this Association by the Indian Tea Association for joint action between India and Ceylon in advertising British grown Tea in the United States of America and desires to submit the same for the approval of the Thirty Committee in Ceylon."

A copy of the scheme proposed is enclosed herewith.

By order of the Executive Committee, WM. MARTIN LEAKE, Secretary.

4, Mincing Lane, London, E.C., May 27th, 1895.

FOOD FOR TYPHOID PATIENTS.

An upcountry lady of experience sends the following recipe as a useful suggestion for change of food:—

MILK JELLY.

1 oz. gelatine, 1 pint milk. Dissolve the gelatine over night in cold water. Next day boil 1 pint milk and pour over it; stir till dissolved and go on stirring until cold. Flavour to taste. A little cinnamon is invalnable in typhoid cases.

Two other simple preparations of milk are given in Dr. Vanderstraaten's chapter of Invalid Cookery at the end of his invaluable book on the Diseases of Children, and they are very easily prepared. We quote as follows:—

A NOURISHING BLANC-MANGE.

To one pint of milk slightly warmed stir in a large dessert-spoonful of liquid rennets and set aside to cool. This makes a soft blanc mange, very easily swallowed. Powdered cinnamon and sugar may be taken with it.

MILK AND EGGS.

Pour a quart of milk into a large, perfectly clean bottle; drop in the whites of three new eggs, cork the bottle and shake hard,

THE SEASON IN MADRAS.

Yesterday the Board of Revenue telegraphed to the Government of India for the week ending the 8th instant:—"Rainfall moderate in parts of the Circars and Deccan Districts and Salem. Light showers elsewhere. None in tho Carnatic. The rainfall to date generally is below the average in the West Coast and Carnatic Districts. Ploughing and sowing is going on slowly in parts. Standing crops are generally fair. Pasture scarce, but fodder sufficient. Cattle is generally in good condition. Prices practically stationary."—*M. Mail*, June 12.

COFFEE, CACOA AND TEA IN SUMATRA.

A DREAM OF THE FUTURE.

VIII.

(Translated from the Deli Courant. 21st-24th Sept. 1892.)

In the year 1905, after 13 years' absence, I returned by chance to Deli, and I recalled to myself the recollection of former events. I speak of 1892 and the following years. By Jove! How all is changed! I might say half a century has passed over Deli, so much has it altered and improved in this time. If I direct my memory to previous times I see a country just passed through a severe crisis. The cultivation of tobacco which in 1889 has reached its culminating point, and which seems to be destined to run a course of prosperity without end, was, in consequence of the universal fall of prices in 1891, menaced with ruin. A panic followed: and a sensible diminution of credit, withdrawal of capital, and want of confidence in the future were the consequences of it. Carelessness of what tomorrow might bring forth, the privilege of the spoilt child of fortune, gave place to uneasiness. In addition to this camo in 1892 an unlucky planting year caused, according to the idea of some, by sickness in tho tobacco nurseries, which was a mystery to science, and mocked every attempted remedy. (Same as H. V. in Ceylon.—Translator) and according to the idea of others, by the exhaustion of the soil, and the bad climatic conditions of this particular season.

It is said that different ideas coming into conflict lead to enlightenment. But in this special case it remains a dark secret: and it was as difficult to see light, as to see your hand before your face on a dark night. For my part I made up my mind that I could not comprehend it at all; like the turkey-cock in the fable who could see something, but could not distinguish properly what it was. What I did not forget, although so many years had passed over, was the heart breaking appearance of so many estates. A lot of tobacco fields with plants dying from the root upwards: leaves crinkled up, or hanging limp and lifeless; and no sap in the stem. The general result of the yield reached barely half that of our average crop. Surely this was the forerunner of the seven following lean years of the Bible. Some people—lucky fellows—escaped the prevailing plague, and made splendid crops. Without sorrow they saw the shrinkage in the production of the country; because it was bound to lead to a rise in prices: and they felt confident that what is in Deli true, as in Timbuctoo, the fortune of one arises from the misfortune of the other. Take it all round however, the cultivation of tobacco had received a severe check: and now you could see how weak was the foundation of the prosperity of the country. In the crowds at a Paris Fair you always hear the cry from the lottery booths: "Step up, gentleman, step up: every ticket wins." But it isn't quite the same in the big lottery, as you may call the tobacco planting enterprise in Deli. Some people win somewhat: but many lose ten times as much. Thus you could see at the time of which I am speaking, a number of hitherto prosperous plantations, collapsing like houses of cards, leaving behind them nothing; and worse than nothing, a land condemned for years and years to sterility. Yes: this land which ought to sweat out gold—so much has been put into it,—was now burning in many places—a dreary wilderness, a lurking place for wild beasts, and a rendezvous for wild pigeons. On this massacre of the poor innocents, the little ones were soon swallowed up: and one by one their plantations fell into the hands of some big companies, which at this date of 1905 are the sole owners of the soil, and possess, as you may say, the monopoly of the tobacco cultivation in Sumatra.

Victory always goes to the biggest money bag; and this rule has always proved true. If you look over all, this buying up of the land, you may almost say at a squeezing price, did no harm to Deli. Owing to their big capital, these Companies were enabled to introduce new modes of treating the tobacco, which were more in harmony with the progress of time. It is true that these changes were only made by degrees: but in theso countries where habits once adopted are not easily eradicated, and where the *jalan p'lān-p'lān* (go slow) of the Malay has almost reached the force of law, you can only expect improvements and progress to make way gradually. But already in the year 1891 we have seen the first appearance of the steam plough in Deli. This was the first sign of the new departure; and a more systematic and rational style of cultivation appears to be set on foot here. Other improvements soon followed. Folk gave up the rough and awkward model of the sheds used for hanging and drying the tobacco. This old relic so past times, which especially was the cause of of much broken leaf in the tobacco, was superseded by the much simpler and more easily constructed sheds which you may now see everywhere, where tobacco once hung in the lower part of the sheds, will at once be lifted in big frames of from 500 to 1,000 trees each, so that it will not have to undergo any more tho wretched manipulation so ruinous to the leaves, of lifting each single pole with 10 trees on each. The system of treatment and manuring of the soil, facilitated by the use of the steam plough, has improved since the timo when a handful of guano was the Alpha and Omega of the whole artificial fertilisation. Without rest, people formerly wanted two or three successive crops from the same soil. Besides the working of the land with a mamoty about a foot deep, nothing was done to renovate the soil: and the strangest thing was that men succeeded in forcing from this overworked stuff one crop more! But as they came back to again re-plant the same fields, they found them sterile; and could not with even a double doso of guano restore the already lost fertility. Like the dried-up breast of a woman, the earth refused to give nourishment, and the soil which, perhaps, has no comparison in the whole East for richness, could produce nothing more than miserable, sickly looking tobacco. If our poor old Europe with its meagre soil had been treated in like manner, we should certainly by this time have reverted to the epoch of the ichtyosaurus!

But with the commencement of the power of the large Companies mentioned above, important progress was effected, of which the result was, that notwithstanding great vicissitudes, Deli has remained at the head of the tobacco-producing countries, and its produce has sustained its high reputation in all the markets of the world. A second benefit, rich in consequences to the future of Deli, was the outcome of the tobacco cultivation falling into such strong hands. These Companies, the sole owners of the whole of the tobacco lands, rightly avoided extending their cultivation on land which past experience had proved to be unsuitable for profitable cropping: indeed after the regulation of the production, the Sumatra tobacco regained its high prices; and the Companies found therein such a source of profit that they did not care to embark on other cultivations.

They left free hands to the small capitalists, so that they could obtain big abandoned concessions; and now, having learnt by past experience, these gave up tobacco planting in order to go ahead with New Products.

From this time dates the foundation of the splendid plantations of Coffee, Cacao, and Tea which make Upper Deli and Serdang the veritable garden of the East.

Conclusion.

The commencements were modest, and involved much hard work, capitalists venturing only cautiously into enterprises requiring long waiting, especially in a country accustomed by so many years of unexampled prosperity, to rapid strokes of fortune. It was necessary at first to combat the prejudices of a community devoted entirely to the cultivation of tobacco, and whose recent reverses had not yet shaken their firm faith. Further, there had here and there been experiments made in the culture of coffee, nearly all turning out badly: that was sufficient to condemn all new attempts in this direction. They did not ask themselves if the previous loss of the money was owing to the unsuitability of the soil, or to ignorance and to a want of confidence on the part of those who had undertaken the first experiments, and who, for the most part, took no trouble to pay attention to a cultivation the commissions on which would go to their successors. No; coffee had not proved at the first stroke that it could give 50 per cent per annum on the capital sunk; and that was sufficient to bury the question for ever. The cause was judged; and it was no good re-opening it. *De profundis!*

Meantime, some *are* returning to it: and the movement once started, will stop no more. The conviction in men's minds was growing, little by little, contrary to the prejudices entertained hitherto, that Liberian can give in this country truly surprising returns.

A planter having taken in hand the wreck of a small abandoned Liberian plantation in Serdang, not far from Loba Pakam, will show what this cultivation can give if worked with determination and energy. Many of the trees were dead, choked by lalang and want of air; others, left to themselves, existed, but barren. In fact, at this time it was but the skeleton of a plantation. Notwithstanding that, there were in September some 1892 trees of really enormous strength and whose crop was as much as 15 and 20 catties of cherry per tree. These giants which had struggled for life in deplorable conditions of abandonment were the living proof that the coffee tree had found its real home. What is more, the young plants, 15,000 to 20,000, put out in 1890-91 and reared with careful attention showed incomparable vigour, giving their first blossom at 20 months which promised to ripen at about 2½ years old. All these small bushes were healthy and well-grown, not bearing a sign of *Hemiliea* which formerly caused so much disaster in Ceylon. An eloquent fact, which itself is worth a volume of prose was also acquired, viz: that compared with the coffee trees of the neighbouring countries, the Straits Settlements for example, where the cultivation of Liberian coffee has been carried on for a number of years, the tree of Sumatra gives not only a more abundant return, but also a heavier fruit. The following experiment proves it. Desiring to try some seed from outside, Mr. de G. secured 10,000 from a well-known plantation in the Straits; seeds specially picked for nurseries: *i.e.* the biggest and heaviest, and which were beautifully and carefully invoiced at so many handsome dollars per 1,000 seeds.

My opinion having been asked as to the value of these seeds, I advised that they should be weighed by comparison with the seeds of the plantation itself. Herewith are the figures of comparison:—

1st weighing.

200 Singapore selected seeds = 86 gr. = 3 oz.
200 Sumatra „ „ = 120 „ = 4¼ oz.

2nd weighing.

200 Singapore seeds, not selected = 81 gr.
200 Sumatra „ „ = 114 gr.

3rd weighing to prove the above.

823 Singapore seeds not selected = exactly 334 gr.

It will be seen that these figures follow and confirm each other. Going further on we find that

1,754 seeds Sumatra } = 1 kilo = 2 1-5th lb.
2,470 „ Singapore }

from which

108,748 Sumatra seeds } = 1 pie. 62 kat. = 1 cwt. 99 lb.
153,140 Singapore „ }

That is to say, for a given weight it would need about ⅓ more of Singapore seeds than of Sumatra; or again, that an acre which gives say 6 pls. in Singapore, gives 8 to 9 pls. in Sumatra. These trials were made before witnesses, and in perfect good faith, the beans being counted one by one: and the conclusions I derive from them appear unassailable. [Quite so: but the seed from the Straits would have to be at least ¾ dried to prevent fermenting, sweating or rotting on the journey: whereas the local seed was probably quite fresh, and only dried to the extent of the water being off it.—*Translator.*]

Thus one goes on: and little by little confidence in the future of coffee gains ground: then came the first virgin crops; and from that moment, like a flash, there was a rush for coffee. For who remembers the Deli of 1892? What a change! and what lee-way it has made up. In place of this medley of rough tracks through a rugged country there has grown up a net work of roads which act now as arteries to this emporium of wealth which Upper Deli has become.

From these plateaux formerly almost inaccessible to European enterprise, come down today in abundance the thousand and one products which help to feed the trade always increasing from the coast.

It is with the introduction of fixed and permanent cultivations that the fortunes of the country definitively rest on a solid foundation: the earth, no more confined to hysterical production only, and prematurely forcing out some thousands of piculs of tobacco, afterwards to be abandoned to brambles: but now, the land, everywhere and always at work, pours its unbroken tide of treasure into the hands of man. Behold the secret of the upward flight which the Deli of 1905 has taken!

Following the general progress the Railway, which in 1892 ended at Deli Toewa, that is to say nowhere, has now reached the glorious plateaux of Seblangit and Betenous, passing lightly over hills and dale; and who can predict that, link by link some day it will not penetrate even to the mysterious regions beyond which are still unknown. Lake Tobah has become a Spa!

And then what a sicht for sair een: what a dazzling sight those thousands of coffee trees in blossom! This milky whiteness falling in the days of blossom like a bridal robe upon the earth, gives something of repose to these lands of violent contrast: here a monotonous dulness: there a wildness surpassing in abruptness the wildest of the Alps.

Another effect not less happy than the lasting nature of the cultivation is the greater attachment of us Europeans to the country in which we formerly were, so to say, birds of passage. In those times no one dreamt of spending his life in this road-side caravanserai. Like a bird on the branch: no one cared to build a nest. The only wish was to take wing and leave far behind a land without charm and without gaiety. *Now* they *live* and can manage to forget old Europe.

E. M.

KEW GARDENS IN MAY.

People who can only manage to come once to Kew Gardens during the month of May do well to time their visit so as to hit off the moment when the hardy azaleas are in flower, and the wild hyacinths are making a blue carpet in the beech-wood that neighbours the plot of garden where these delightful shrubs grow. It is not every year that the bluebells and the azaleas are out at the same time. That only happens in fortunate springs. But this year spring is very fortunate, and the two events are coinciding perfectly. The azaleas will outlast the bluebells. The grey-blue haze that makes the little copse look as if the sky had dipped down into the grass, will have passed away long before the reds and pinks and oranges of the azalea garden are over. But at this moment both the wild flowers and the cultivated ones are in their prime; and we do not remember having ever seen their effects more happily combined. The colours of the azaleas are, or seem to be, unusually brilliant this year, while the recent spell of hot, dry weather has allowed their flowers to open without any disturbance. Neither the tints nor the forms of the blossoms have been spoilt by rain. Not a single flower has yet fallen; and though of the mass of buds upon the shrubs only a small proportion have yet opened, there is blossom enough to make the parterre a blaze of wonderfully lovely colour: and the brilliancy of this centre of glory is delightfully set off by the freshness and delicacy of its surroundings.

Mid-May, when alternate rain and sunshine have done their parts as they have done this year, is an exquisite moment for foliage. The trees are full, but they have not ceased to be transparent. Green is a colour still, not yet an obscurity. There is no trace of dust or dryness; not yet the grey oppression of midsummer density. All is delicate, vivid, diaphanous, fresh. The horse-chestnuts, the thorns, the lilacs, the laburnums are in flower. Lawns are powdered with daisies, longer grass is covered with fieldrush, butter-cups, and ground-ivy. The oaks and the Spanish chestnuts have advanced to the point of delicately defined leaf; while the beeches, though they have come out of that early ethereal stage when they seem rather to be sprinkled with green than clothed with leaves of definite shape and consistency, are still so slightly covered that little is lost of the stately forms of their grey boles, while new beauties are gained by the breaking up of the sunshine into dancing lights and shadows. The leaves are still small enough for the outline of each to complete itself distinctly to the eye; there is as yet no merging of detail in mass and group, and the general effect is bright and marry, like the flecking of mackerel clouds on a summer sky.

There is no part of the Gardens from which the eye may not take its fill of the vivid greens that belong specially to spring. But if we want to enjoy at one glance the greatest variety of tints, and the most striking contrasts of colour, we must follow the walk that leads between the Azalea garden and the beech-grove where the bluebells are, cross the low-lying shrubbery where the rhododendrons grow, climb the slope on the further side, and take our stand with the river to the left, and the beech-wood to the right, and the rhododendron valley in front of us. So we shall be able to see all at once the irregular screen of Scotch firs, cedars, and dusky hollies, that makes a dark foreground to the grove of light-green beeches; the deep-red, pale mauve and opal-white of the few rhododendrons, already in flower, which show up so finely against the green masses of their slower-flowering neighbours; the flame-colours of the azaleas: the warm and tender pink of the young leaves of the copper-beeches that are scattered so generously about this part of the plantation; and the blue gleaming of the river through the belt of fine trees that girdles the grounds.

But though this spot commands at this moment the most beautiful view in the Gardens, and the blaze of azaleas in flower makes the most splendid show of all the year,—yet there is about it all just that touch of sadness that belongs to any climax. It is the best, but it is also the last show of spring. The next changes, the next showers will usher in the summer. Not only will the foliage be never again through all the year so tender, so vivid, and so varied as it is now, but so many flowers are already over, so many beautiful pages of the year are turned. The wild daffodils that made a little while ago such charming pre-Raphaelite pictures all about the Gardens are quite gone. So are all the rarer kinds of same family that filled the formal beds a little later, and contributed so handsomely to the yellow effects that make an essential part of the radiance of spring. The fine magnolia that stood like a white beacon in the centre of the Azalia Garden in the beginning of the month, has shed almost all its flowers. The Siberian crabs have shed theirs also, though some of their cousins from China and Japan are only now coming into bloom. Over, too, is the splendid show of tulips that filled the space between the round pond and the Palm House. And though a few tulip-beds near the hot-houses still keep their brightness, the flowers are mostly overblown, and their magnificence is degenerating into garishness. One is not sorry to pass from them to the rock walk and enjoy the contrast of the quiet beauties of the multitude of interesting plants, common and uncommon, springing up in its crannies. Periwinkles, white and blue, scillas and fritillaries, a few lingering primroses, common dog-violets, ferns, familiar and unfamiliar, uncurling their rough and tender fronds; saxifrages, columbines, forget-me-nots, lilies of the valley, white and yellow alyssums—all our common shrubbery friends mingle here in studied disorder with rare foreign plants. One of the first things to attract attention as we enter the walk, is the exceedingly tiny and exceedingly brilliant flower of the white sandwort from New Zealand, the minute foliage of which clings to the stones like moss, while each little blossom stands out with the distinctness of enamel. Another white flower of very different character that no one could pass without admiration, is the noble *Trillium grandiflorum* from North America. A week ago the most beautiful object in the whole rockery was a lovely double peach, covered with deep-pink blossom, which stood like a sentinel at the far end of the walk, seeming to guard the little defile. Now that also has lost its glory, and one passes its place almost without noticing that there is a tree there. But if some blossoms are passing away, others are still opening. Everywhere about the Gardens, the common yellow broom is coming into flower, and two magnificent bushes of the earlier flowering variety, known as *Genista praecox*, are still (or were when the writer saw the Gardens a day or two ago), in full beauty. With the afternoon sun shining upon them they flash and radiate like immense fires, but seen later in the evening, the coolness and tenderness of their pale yellow strikes one most. Some excellent effects of colour are got in beds without the use of a single flower by mixing the copper varieties of nut, plum, berberus, and beech, with variegated ribes,

euonymus, dogwood, and maple, and a most beautiful blood-red shrub that well deserves its name of *Acer sanguineum.* Everywhere there is an extraordinary profusion and variety of colour to delight the eye. And sight is not the only sense to be delighted in this seductive paradise. The air is sweet with most delicious scents, and the groves are musical with the songs of birds.—*Spectator.*

VISIT OF A BOTANIST.

Dr. Phil Carl Holtermann of Munster, Westphalia, is on his way out to Java where he will stay a year or so at Buitenzorg, specially studying the "fungi," and afterwards visiting New Guinea, Borneo, and Sumatra. Dr. Holtermann has been a few weeks in Ceylon, chiefly with Mr. Nock at Peradeniya and Hakgalla. He is anxious to see our pitcher plant (*Nepenthes distillatoria*) which used to be very common in the damp hollows between the Museum and Victoria Park, and specimens of which, we trust, are still to be found in that neighbourhood to interest such visitors as Dr. Holtermann. If not, they can be freely seen off the Galle road near Mount Lavinia and Ratmalane. We shall take care Dr. Holtermann sees at least one plant before he leaves by the ss. "Bayern" on the 21st. He hopes to spend a month in Ceylon on his return and to meet Dr. Trimen.

THE LAST CINNAMON SALES.

We were able, in last Wednesday's issue, only to call attention to the Report of a leading Firm of London Agents, on the Quarterly Sale of Cinnamon held in Mincing Lane on the 27th May last. The prices realized were in every way satisfactory—we mean, having regard to those which had ruled for months and years past, though values have not by any means approximated to those which the spice had fetched, say in the sixties and seventies. At the February Sales, there was a slight advance, which was said to be chiefly due to the limited quantity offered—only 766 bales—and to the scarcity of fine qualities. As we noted at the time, only two of the well-known marks aggregating less than 100 bales. were then represented, A.S.G.P. (Golna Pokuna) and F. B., Franklands —the latter only a small parcel of 9 bales which showed an advance of fully 1½d a lb. It was feared that fuller supplies might affect prices prejudicially at the May sale; but so far from this being the case, the whole of the 1,063 bales offered found buyers and there was an advance in price in all grades, from ½d to as much as 1½d. The cheering features are, that none of the Cinnamon had to be bought in, and that the common and medium barks shared in the advance. At the February sale, it was only fine that showed any appreciable rise in price. Nor can the general rise be referred to a limited supply, as in May last year, the quantity which offered was much the same—1,073 bales; so that we are entitled to assume that there is an improving demand for our spice. It cannot be said that there has been any serious falling-off in our Exports, though from the better known estates there have been complaints of the effect of recent droughts and of the scarcity of peelers. Somehow, the Customs figures are maintained, chiefly, we suspect, from the produce of Native Gardens, from which in emergencies bark is obtained all the year round. Anyway, 1894 with an export of close on two million lb. of quilled bark, was a good average year, the quantity shipped having been exceeded only thrice before at intervals. This year, too, the exports have been fair—the quantity of quilled bark being in excess of that exported during the corresponding periods of the two last years, and having been exceeded in 1892 by only 50,000 lb.; while in chips the current year is well ahead of the past three years with more than 100,000 lb. in excess. The explanation of the statistical position of the article being good is, we suppose, that there have been larger deliveries. Can any expert tell us what is the explanation of this? We have recently read of the value of cinnamon as an antiseptic being recognized in Western Medicine—the nativess have always believed in its efficacy as such—and in a sick room, especially in typhoid, we have heard that a small quantity burnt at intervals in a brazier has a very wholesome effect. Then, there was much talk a short time ago of its efficacy —has the statement been confirmed by local medical experience?—in cases of cancer: but it is hardly likely these have told appreciably on the demand. Its chief use is for flavouring purposes—the growing consumption of chocolate and cocoa preparations should lead to an active demand—and in the preparation of incense in Roman Catholic countries. Whatever the explanation, the improved demand and the consequent better prices must be good news to long-suffering Proprietors, and will we trust continue and even grow; for even on the best estates the profits from cinnamon are but small, as compared with tea and coconuts. Let us hope a good time is coming for our historical spice.

Turning to the catalogue we find Golna Pokuna, the well-known Kadirana property owned by the family—the proprietor, we believe died as Mayor of Bristol—heading the list with its spice selling up to 1s 4d per lb. F. S. W. S.—Wester Seaton the property of the veteran Frederick Schrader—runs in its neighbourhood with prices ranging only 1d less; and is closely followed by Kimbulpitiya (also Mr. Schrader's property) and the marks of Rajapakse Mudaliyar, which fetched prices up to 1s 1d. The medium marks ran up to 9d; and even "unworked" cinnamon —that protest against needless and expensive handling of the spice in London Docks and Warehouses—was not neglected, as it usually is at the auctions, but was all taken off at prices ranging from 6½d to 8½d per lb. Good so far; and we are not surprised to find cinnamon reported locally as "firm." May it be always so!

NOTE ON EXTRACTION OF AGAVE AMERICANA FIBRE AT COIMBATORE.

When on tour in the Madras Presidency in 1892 I was much struck with the excellent quality of the fibre of *Agave americana*, which was exposed for sale in many shops in the Coimbatore bazar. A small quantity of the fibre was sent for report to the Imperial Institute, in connection with which I was at that time engaged in the investigation of fibres of Indian production which are, or might be, utilized for brush manufacture.*

Quite recently the Madras Agri-Horticultural Society received a communication from Dr. T. Cooke, Technical Sub-Director of the Imperial Institute, South Kensington, stating that fibre of *Agave ameri-*

* See Imperial Institute, *Hand-book of Commercial Products*, No. 12, Fibres used for Brush-making.

cana (grown, I take it in the gardens at Madras) has been very well reported on, and is considered to be nearly as good as Manilla hemp.

The only specimens of fibre of *Agave americana* which were sent to the Imperial Institute from the Madras Presidency were those obtained by himself at Coimbatore, which must be those which have been thus favorably reported on.

Dr. Cooke's letter to the Agri-Horticultural Society was communicated to me, together with a series of questions by a fibre expert, I accordingly deputed the Museum Herbarium Keeper to visit Coimbatore and gave him specific instructions as to the nature of the inquiries which he was to make. The result of his inquires *in loco* is embodied in the following note—

Agave americana grows in all soils (red, black and gravel) in the Coimbatore district. It is planted extensively as a protective hedge along the Madras Railway line, and flourishes, in the open, freely exposed to the sum, and unsheltered by trees, shrubs, &c. In some places between Coimbatore and Erode where the agave is overgrown with creepers, the plants are unhealthy; and in other places (*e.g.*, near Tudiyalur), plants which are shaded by tamarind, nim and other trees, are stunted, while those which grow in the open, are rich in leaves and luxuriant in growth.

The age of the plants from which the leaves are taken for fibre is six to seven years. The old green leaves falling outwards from the central stem are cut for fibre.

The fibre is, as a general rule, extracted immediately after the leaves have been cut, or after a lapse of a few hours. Sometimes, however, the leaves are kept for a day or two and the fibre is extracted when the people have leisure.

The extraction of the fibre is performed by hand and no machinery is used. The fibre is extracted by two methods, viz. (*a*) scraping and (*b*) maceration.

(*a*) *Scraping.*—The leaves are cut, the sharp spines removen with a knife, and about six inches cut off from the top of the leaf. The leaf is then split longitudinally into four or five pieces, which are beaten with a wooden mallet and placed on a board 4' × 4" × 3" held firmly by the toes. The pulp is then removed by means of bamboo scraper, one edge of which is shaped in the form of a blade, and the fibre dried by exposure to the sun.

The fibre obtained by this simple process without washing or bleaching is very clean and free from pulp. The staple is not, however, very long. It is made into thread, which is used in weaving grass mats.

(*b*) *Maceration.*—As in the previous method of fibre-extraction, the leaves are cut, and the spines removed. The whole leaf is then beaten with a wooden mallet, and thrown in bundles into tanks or wells, in which it is left to macerate for a fortnight to twenty days, or until the pulp is quite decomposed. The bundles are then taken out dried and bleached in the sun.

The fibre obtained by this process is longer than that obtained by scraping, but is not nearly so clean.

A very large supply of the fibre could be obtained, if a demand of it arose. At present it is sold in the bazar at the rate of 2 annas per lb., but if a regular trade in it was started, the price would doubtless be reduced.

The mean temperature of Coimbatore is 78° ranging between a maximum of 97° and a minimum of 64°. The annual rainfall of Coimbatore is about 21 inches, of which half falls during the north-east monsoon (October to December), the remainder being distributed over the other months of the year.

(Signed) EDGAR THURSTON,
Superintendent, Govt. Central Museum.

DR. CLEGHORN AND REMINISCENCES.

I see from the *Observer* that Dr. Hugh Cleghorn is no more. I have a very kindly recollection of the dear old man whom I met when in Edinburgh between 1887 and 1889. Writing of Dr. Cleghorn reminds me in what good stead the fact of my "belonging to Ceylon" stood me in the West. (Alas! it is a stumbling-block and an offence to our Government in Ceylon!) Through it I made many friendly and pleasant connections in many parts of England and Scotland, and it once served me well in Paris. But I must tell you of a strange experience I had in Scotland. I once happened to be travelling with a friend—a "visiting agent" we would call him here—who was bound for a sheep farm in the wildest part of Gallowayshire. I remember now passing Craigenvuy (with its associations of Carlyle) on our way, and finally reaching our destination for the night—a shepherd's cottage on the borders of Loch H———.

After supper my friend and I trudged across the moor to visit another herd's cottage about a mile off. It was a "misty, moisty" dark night, and as we walked along we heard the sound of footsteps approaching along the lonely road—for except for one country house, there were no dwellings but scattered herds' cottages for miles around. "Good night, Sir," called out my companion to the ghost of a tall man that came by us; then after a few words "Let me introduce you to my friend Mr. D." But the tall stranger seemed to have received a shock. "D—— D——," he muttered, "Where did I hear that name? Of course—you belong to Ceylon —any relation of Major D—— of the Rifles?"

And so he rattled on till he carried us into the only decent house in the countryside, and there introduced me to the Shcriff of L—— and his daughter, who were his guests. But I had to say all I knew about Ceylon that night, for the benefit of my new friend who had last seen the place long before I had been born, and gave me what to me, was an amusing account of Colombo in his day.

But to return to Dr. Cleghorn; I once came before him for an "oral" in Botany. He was a venerable looking old man with a grey beard, and looked very much older than he must have been (about 7 years ago) for I find that he was only 75 when he died. Besides the good Doctor seemed to be more infirm than he should have been. "You belong to Ceylon!" he exclaimed as I presented myself before him, and straight-way we started to compare notes,—my venerable Examiner seeming quite cheered by the recollection of the "beautiful place" as he called it. But before we were aware that the prescribed ten minutes for the "oral" had slipped by, the sound of a hand-bell (indicating that the candidates must "move on" to the table of the next examiner) was heard. "What is the botanical name of the rice plant?" he hurriedly asked. I gave it him. "Quite right, quite right!" said the dear old doctor, shaking inwardly with laughter, while my lecturer on Botany who sat behind the Examiner, was literally convulsed. On another occasion I went before Marshall Ward and Prof. Balfour, and again through my Ceylon connection no doubt, I got the question:—"Is the fruit of the coconut palm a nut? If not, what kind of a fruit is it, botanically speaking?" I scored there, and as I returned after my oral I found two of our men discussing the nature of the coconut fruit. "Why, man," said one, "if a coconut is not a nut, what is it?" "It's a drupe of course—a fibrous drupe," replied the other, and added maliciously "not unlike your head!" But every time I look at the signature of "H. Cleghorn, L.L.D." written in a fine bold hand among the rest of the names at the bottom of my diploma-sheet, I cannot help smiling at the recollection of the little incident I have referred to above, and of how *Oryza sativa* pulled me through my Exam, and saved the concience of dear Doctor Cleghorn. D.

GREVILLEA ROBUSTA IN ENGLAND.

(From the *Gardeners' Chronicle*, May 11th.)

Looking in recently at the Botanic Gardens at Cambridge, where visitors will always find much of beauty or of interest, either out of doors or in the fine open ranges of well-furnished glass-houses, I found an unusually fine specimen of this graceful plant. Considering the grace and beauty of Grevilleas, of which there are many species, it is rather surprising to find them so little and so seldom grown, unless for foliage plants in a small state. And yet

there are few greenhouse plants more readily raised from seed or cuttings, if inserted at the right time, or more easily grown. While for the clothing of walls, pillars, rafters, and arches, few plants can equal or excel Grevilleas. And yet I have known several good gardeners who have never seen these plants in bloom, unless at Kew, or in other botanical gardens.

This is the more surprising as they are about as easily grown as a Cytisus. The contrast between the two species may be said to be between glare and grace, and the glare of the gold has won by ten-hundred to one or more. In other words a thousand Cytisus are bloomed annually to one Grevillea. This proportion would assuredly be greatly altered if visitors to botanic gardens at this season of the year would enquire for Grevillea robusta and other species in flower. The specific name will probably surprise the uninitiated; for though we have such species as elegans, elegantissima, &c., few can beat the normal species for the extreme gracefulness of its drooping flowers.

For changes of habit or of colour, the following species may also be grown:—G. alpina (alpestris), G. Fosteri, G. Drummondi, G. fasciculata, G. aspleniifolia, G. Manglesi, G. lavendulacea, G. I. rosea, and G. glabra. The fine specimen in the Botanic Garden, Cambridge, is planted out, and has a free head, which suits it admirably. Grevilleas also form model rafter plants, sweeping back to the ground lines with inimitable grace and elegance. The flowers also have great persistency after cutting, if the simple precaution is taken to cut the stems afresh every second day they are in water. Cut spray in vases and baskets in living rooms have thus been kept fresh and beautiful for a fortnight or three weeks after cutting.

There should be money in Grevilleas in bloom in a small state to the first enterprising florist who succeeds in putting them on the market in quantity, in sizes but little taller than the market samples of Cytisus racemosus.—D. T. F.

CHEAP TRANSPORT AND HOW TO GET IT.—No. IV.

By J. Davis-Allen.

RAILWAY TARIFFS.

The late Water Bagehot, Editor of the *Economist* and trusted adviser of the English Treasury Bench, avers in a posthumous work that chief among the essentials of a good business man is stupidity. Now stupidity is not commonly ranked among the virtues, and to call a man stupid is on all hands accounted rude; it would seem, therefore, as if Bagehot's literary executor had played the Froude with him. But what he meant by stupidity is clear enough, and leaves one all the more surprised at his use of so opprobrious a term. He meant unflinching repression of the intellect to the here and the now; judicious indifference to the flaws and hitches of an argument so the conclusion be as desired; impatience of any display of wisdom beyond the needs of the case in hand; above all, abhorrence of originality as being akin to the caperings of a wild ass: aptitudes these with which the fortunate are born, to which the well-advised aspire, and without which the arts and pursuits connected with the *exchange* as distinguished from the *production* of commodities, notably of those commodities popularly known as "Scrip," cannot be successfully prosecuted. Now and again a man like the Premier of Cape Colony, Mr. C. J. Rhodes, despite his portentous originality and the far-brought and epic considerations by which he is habitually actuated, is able to exploit the commercial spirit by commercial methods for eminently uncommercial ends. Such cases are, however, rare, and of the bulk of the world's business Bagehot's doctrine holds good. But not of all of it; not, for instance, of that department of railway administration which is concerned with the problems and devices of the

TARIFF.

In this field so unusual are the aptitudes in demand that those accounted "experts" (or let us say "authorities" and leave the unclean word "expert" to the law-courts and predatory finance) are not above a score, taking England and the United States together. How they groped their way to the views and methods in vogue today, and how little by little the labyrinthine tariff schemes which now obtain were elaborated, may be studied in the Parliamentary Reports and legislative measures extending from the Railways Regulation Act of 1840, the first of the general Acts, to the important Railway and Canal Traffic Acts of 1888 and 1894. In the earlier railway bills provision was made for allowing private individuals to run their own conveyances on the metals with the same rights as on the public highway! The tariff notions of those days were to match: so much a mile for so much weight, and (odder still to the modern man dead against preferential rates) special terms to regular customers. The numerous and often recondite considerations by which the classification and rating of freight are now determined were then accounted of only academic interest. Starting with the axiom common to most industries that cost of production is one of the chief determinants of price, the first railway managers anxiously endeavoured to assimilate the charge for every service to the cost of it, whereas now there is no pretence that the charge in any particular case bears any relation to the prime cost to the administration. The "Canadian Pacific" carries, or used a little while back to carry, wheat from Fort William at the N.-W end of Lake Superior to the Atlantic sea-board at under prime cost of conveyance—stress of competition of course,—charging on the far shorter Fort William-Winnipeg section rates so much in excess of prime cost of conveyance as to average out at a profit on the entire system. So with most railways: local traffic and through traffic, long hauls and short hauls are differently rated; and places where there is competition with, say, water carriage, or which can supply return freight, get easier rates than places where the railway is the sole means of transport, or from which the cars run back empty. Or (still illustrating the same principle) an industry struggling under severe competition will be assisted by the concession of a pepper-corn rate on its output, it being to the interest of the railway to keep the industry on its legs for the sake of the inward traffic it puts on the metals. It should be noted that the grant-in-aid, for this is what the reduction of the rate amounts to, is made on the outward rather than on the inward traffic, because the latter, consisting for the most part of articles in general demand, any lowering of the rates thereon would necessarily be enjoyed by persons and industries needing no such assistance.

The late Mr. C. H. Parkes, Chairman of the Great Eastern Railway (England) once said to the present writer that while no hard and fast rules could be laid down for the classification and rating of railway traffic,

FOUR CONSIDERATIONS

were always present in his mind in dealing therewith; (1) that there is no assignable limit to the extent to which traffic may be created by the increase of facilities; (2) that the judiciousness of any proposed tariff change is best measured by its remoter effects; (3) that any

change substantially detrimental to the public will "in the long run"—a favourite phrase of his—prove detrimental to the railway; (4) that with respect to industry, railway rates are in the nature of a tax, of a tax too which, being heavier in proportion to the ratepayer's distance from his market, is levied on disability, and is therefore in conflict with the sound principles of taxation. If it be objected that there is more philanthropy than business in these maxims, we point for answer to the work which Mr. Parkes did in the light of them. He found the "Great Eastern" virtually bankrupt, a by-word and a shaking of the head to shareholders and public alike; he left it in 1893, after 19 years of original and intrepid management, a "first-class" railway, in many respects *primus inter pares*, notably in the frequency and punctuality of its train services, and in its treatment of third-class passengers. Few railway companies are well spoken of by shareholders and public alike: Mr. Parkes's Company was so spoken of. We cite him here because his achievements, among them the working men's suburbs East of the Lea which by means of the half-penny fare he may be said to have created, demonstrate the power of the tariff for good, and afford an object lesson in the wise use of it.

Oftener unhappily

THE POWER OF THE TARIFF

is either ignored or misused, and is shown in the disorganisation of business and the paralysis of industry. It is not too much to aver that the collapse of the English agricultural industries and a good deal of wrong-headed political agitation ensuing therefrom are mainly due (we say "mainly," because it cannot be too clearly kept in mind that no large economic change is referable to a single cause) to the amazingly low "long-haul" rates to the sea-board which obtain on the trans-Atlantic railways: a trifle over a farthing per ton per mile (6·39 mills exactly) being average rate for all classes of freight on the wheat lines of the United States.

English agriculture thus got its first wound from foreign railways; it would appear to be about to receive its death blow from English railways: and this by means of preferential rates in favour of imported food-stuffs. Aided, however, by the London Chamber of Commerce and the Mansion House Association, the imperilled industries have instituted in the Court of the Railway and Canal Commission a test-action against the London and South Western Railway under clause 27 of the Railway and Canal Traffic Act of 1888, which provides "that no Railway Company shall make, nor shall the Court or the Commissioners sanction, any difference in the tolls, rates or charges made for, or any difference in the treatment of, home and foreign merchandise in respect of the same or similar service." The applicants alleged that in the case of certain specified kinds of merchandise, namely bacon, fresh meat, lard, butter, cheese, hops, hay, and wool, the Company charged on the imported article an uniform rate of 6s per ton from Southampton Docks to London (76 miles) whereas from Southampton and intermediate station to London the rates on the home-made article ranged from 9s 8d to 23s. The respondent Company admitted the preference, but justified it on the following among other grounds: That the lower rate on imported goods was an apportioned amount of a through rate covering ocean carriage; that it did not include certain terminal charges which for fair comparison with the higher but inclusive rate must be taken into account; that the arrangement complained of was necessary to enable them to compete with water carriage to London; that the local traffic because insufficient in volume, badly packed, and necessitating more shunting, supervision, and risk, could not profitably be carried at the lower rate. In result the Court ruled that the Company had made good their answer in respect of all the articles in question except hay, hops, and fresh meat, on which three the rate was ordered to be lowered. The report of the trial

"MANSION HOUSE ASSOCIATION *v.* L. & S. W. RAILY. COY.

and the comments of the Press thereon merit careful study on the part of all concerned in railway administration. It is a leading case, and as Lord Jersey's recent motion in the House of Lords portends, will be followed by fresh legislation. For as the law stands, it has been shown to be inadequate to safeguard the trade of the country under the tremendous powers of control exercised by the railway companies through the tariff.

The Railway and Canal Commission mentioned above is a tribunal created by Act of Parliament in 1873 and reconstituted with enlarged powers in 1888. Its business, as we have just seen, is to adjudicate on the legality of rates and charges, and of claims to reductions thereof in virtue of certain "special circumstances" which have received statutory recognition. Questions of the classification of freight come within its jurisdiction; and it has power to order such "reasonable facilities" for traffic as the interests of the public may require. Similar functions are discharged in the United States by the Inter-State Commerce Commission. In several of English Colonies where the railways are in the hands of Government no important

TIME-TABLE OR TARIFF-CHANGES

are made without prior reference to the Chambers of Commerce, which are thus invested, and to the common good, with a quasi-official status in the Railway Department. Says the General Manager of the Cape Government Railways in his Administration Report for 1893.—"The plan I have adopted in concert with the Chief Traffic Manager of consulting in greater detail with Chambers of Commerce, and of meeting other public bodies interested in railway management will, I trust, remove some of the causes of complaint to which attention has been called. I think the Department is now more in touch with the public; and while I cannot expect total exemption from complaint or criticism I trust the public is satisfied that as much as possible is being done to meet its requirements. After all the whole object of the Department should be to meet the reasonable wishes of the public."

So far we have discussed our subject without specific reference to local needs and circumstances; to these we now turn. And first: the probable enlistment of

PRIVATE ENTERPRISE

for railway purposes in Ceylon has excited a good deal of enquiry as to how the public is to be protected against extortionate administration, and with this in view it has been suggested that with respect to rates Government should at the outset fix a maximum tariff. But we submit that such a provision would fall ludicrously short of efficient protection. As the facts to which in this article we have sought to draw attention clearly show, it would barely touch the more serious sources of danger. And supposing a schedule

of maximum charges were enacted, the cardinal question would still remain open, what may the public demand in return for the statutory rates? Mere conveyance from point to point? If more—how much more? Conveyance is only one of the services rendered by a railway Company. Handling and safe custody of goods at stations and in transit; special provision for fragile and perishable merchandise; collection and delivery of goods; passenger conveniences in all their variety; police safeguards—such are a few of the appliances, cited by way of reminder, which it is the multiform business of railway administration to provide: are all of them covered by the statutory rates? If not, which may be charged for separately, and on what scale? How ineffectual against rack-rating and undue preference are the popular expedients of statutory tariffs and classifications (the two necessarily go together) is exemplified in the case of the Mansion House Association *v.* L. and S. W. Railway Company, and in greater detail in the 1892 Report of the Special Parliamentary Committee on Railway Rates (England). Nor are the expedients merely ineffectual; they are themselves evils inasmuch as they conflict with the pliabilty which is indispensable if tariffs are to be kept adjusted to the ever-varying needs and contingencies of trade.

Attempts to provide in advance and once for all against the innumerable points and varieties of conflict of interest stand now discredited. The best opinions are in favour of the reservation to Government of a right of control for specified purposes: which power shall be exercised as and when circumstances require by a tribunal similar in status and powers to the Railway and Canal Commission of England or, perhaps better, the American Inter-State Commerce Commission, and from whose ruling both parties have a right of appeal to the Supreme Court. Be it noted, that such a tribunal, with such powers is every bit as necessary where the railways are in the hands of a Government Department as it is where the railways are in the hands of a Board of Directors. It is indeed more necessary, for the red-tape of your public official is a deal less open to reason than the rapacity of your private capitalist.

Turning now to another matter, let us begin with Mr. Parkes' fourth maxim. In stigmatising

RAILWAY RATES AS A TAX

levied on disability, he had in mind, we may presume the first of the four principles of taxation enunciated by Adam Smith in the concluding section of his "Wealth of Nations," the principle that the subjects of a State should be laid under contribution for the purposes of Government 'as nearly as possible in proportion to their respective abilities.' That remoteness from market as a disability is obvious, and the inequitableness of taxing a producer *pro rata* on his remoteness is obvious too; what perhaps is not so obvious is the appropriateness of the word "tax" to such payments, and it may freely be admitted that whereas in England railways are private property, Mr. Parkes's description of railway rates might not be allowed to pass unchallenged. Where, however, railways are an appurtenance of Government, and are worked as a source of general revenue as in Ceylon, the appropriateness of the description is beyond reach of challenge. Consider the following statements of facts abstracted from the official returns for 1893:—(1). That after providing for Working Expenses, interest on Capital, up-keep, and new works, the Ceylon Government Railway contributes R1,096,065 to general revenue, or in other words sustains nearly 8 per cent of the cost of the other Departments. (2). That this item of general revenue is drawn for the most part from the Tea industry which contributes upwards of 40 per cent of the gross receipts of the Ceylon Government Railway. (3). Those estates which send their Tea to and obtain their supplies from the coast otherwise than by rail escape the tax altogether. The inequality of incidence with respect to the industry as a whole may be gauged by the fact that in 1893 about 28,000 tons (nett) of Tea were enrailed against 37,000 tons shipped; (4) that not only is some tea taxed and some (say 25%) not, but even upon the taxed section of the industry the incidence is most unequal, the Haputale estates, for example, being amerced more heavily than the Kandy estates in the ratio of their mileage from Colombo; (5) and generally, that in so far as the C.G.R. is employed as an instrument of taxation the coast is released from the burden of the cost of Government at the expense of the interior.

These considerations go to show that between the yield of say, the Customs and the surplus paid into the Treasury by the Railway Department there is no difference except the inequitableness of the latter; and, further, how ill-suited are railways for taxational purposes.

Under the circumstances which obtained in some of the Colonies, possibly also in Ceylon, it may be politic to make the existing lines contributory, within limits, to extensions, but even then the contribution should be equitably levied. Always it should be a principal care with a Government administering the railways of a country to redress geographical disabilities by one or other of the tariff expedients—the "zone system" to name only one, devised and practised by private enterprise.

A third peculiarity claiming a large share in the shaping of the Ceylon railway tariff—the fiscal tariff too—is to be found in

THE CURRENCY.

Accepting Mr. Parkes's principle of levying rates as if they were taxes, traffic will be classified and assessed according rather to ability than to prime cost of transportation, the aim of the management being to make a profit, not on each transaction, but upon all of them taken together. Now it is clear that in a silver-using country like Ceylon, so long as the gold-value of silver continues fluctuant, the kind of ability under discussion will hinge largely on exchange; and, further, that of two industries that industry should be able to sustain the higher rate which pays most in silver and is paid most in gold. What modifications exactly would require to be made in the existing tariff if in the classification and rating of merchandise these considerations were allowed their due share, we are not prepared to say. We need first a schedule of industries scaled according to the degree in which their incomings and outgoings are liable to be affected by the gold-price of silver; and such a schedule presupposes an investigation similar to that instituted by the German Government prior to the adoption of a gold standard.

COFFEE IN MATANG: MONTHLY REPORT FOR APRIL. —Che Muntil, who owns a coffee garden, near here, applied to me for 20 acres more land for the same purpose, and I hope more people will soon take up this cultivation.—A. T. Dew, District Magistrate, May 20.—*Perak Government Gazette.*

INDIAN PATENTS.

Calcutta, the 6th June, 1895.

Applications in respect of the undermentioned Inventions have been filed, during the week ending 1st June 1895, unde the provisions of Act V of 1888.

For Flooring Stables and Porticoes.—182 of 1895.—H. Fornaro, Engineer and Contractor, residing at No. 17, Convent Road, Entally, for flooring stables, porticoes, passages for carriages and horses, foot-paths, etc., etc., in such a substantial way as has never been done before.

For Improvements in the Construction and Manufacture of Shingles for Roofs, Walls, Flooring Boards, and such Similar Purposes.—185 of 1895.—Joseph Heim of Singapore and Penang, Merchant, residing at Penang, in the Colony of the Straits Settlements, for improvements in the construction and manufacture of shingles for roofs, walls, flooring, boards, and such similar purposes.

For Improvements in and connected with Machinery for producing Cotton seed meal.—367 of 1894—George Henry Croker, an Inventor, of 18, Bellevue Road, Seacombe, in the County of Chester, England, for improvements in and connected with machinery for producing cotton seed meal from cotton seeds. (Filed 23rd, May, 1895.)—*Indian Engineer.*

"CAMPHOR"—A NEW PRODUCT: WORTHY OF SPECIAL ATTENTION FROM CEYLON PLANTERS.

The Acting Director of our Botanical Gardens deserves the thanks of the planting community for being on the alert at this time, to bring his available supply of camphor plants under their notice. For, we have observed, equally with Mr. Nock, that the market reports speak of an anticipated famine of the raw product in the Camphor trade, and the camphor tree is one that may readily be grown in many parts of Ceylon. This is proved by the success which has attended the cultivation both at Peradeniya and Hakgalla, and it is Mr. Nock's belief that it will flourish—in the drier districts especially—anywhere between 2,000 feet and the frost-line. These conditions make it plain that there must be a wide extent of land suited to the cultivation of the camphor tree and we cannot help thinking that the present would be a favourable time for some of our more enterprising planters to commence to give it a trail. We learn that a small, young, plantation of camphor trees, is growing well at Peradeniya Grdens and the trees are in perfect health and vigour at Hakgalla. Uva ought from all accounts to be a "paradise" for the camphor tree!

The annual export of this product from Japan averages about 5,000,000 lb. (five million pounds) and the prices quoted in the *Pharmaceutical Journal*, dated 8th June, are for "Crude" Camphor from 155s to 160s per picul (picul=133⅓ lb.) and for refined Camphor the quotation is 1s 9½d per lb. and even up to 1s 10½d. Camphor is an article of daily consumption; for it is "used as a medicine in diseases—from the most fatal form of Asiatic cholera to a mere cold in the head." It is also used in the manufacture of explosives and, we believe, enters largely into the composition of the smokeless gunpowder.

Apart from these possible outlets for large quantities, we must remember that the plant is an evergreen ornamental tree of the laurel family, and yields valuable wood for cabinets (especially for entomologists) and fancy articles. It is also used in ship-building, and the oil it produces is useful for illuminating and other purposes. Then again the camphor is a long-lived tree. Some trees in Japan are said to be upwards of 300 years old, and in the *Pharmaceutical Journal* of Sept. 30th, 1893, it is stated "that in a village in Kochi (Tosa) there is a group of thirteen trees about 100 years old; and it has been estimated that these are capable of yielding some 40,000 lb. of Crude Camphor, and are, therefore, worth as they now stand (in 1893) 4,000 silver dollars!" The camphor is prepared from the wood of the tree by boiling the chopped branches in water, when, after some time, the camphor becomes deposited, and is purified by sublimation. We shall give a good deal of further practical information on the subject in our *Tropical Agriculturist.*

The drawback to the cultivation of camphor appears to be that the trees require to attain a certain age before its branches, &c., yield the drug in any considerable quantity. But this delay was the objection in Ceylon, with cinchona at first, and we must remember how our planters soon narrowed down the limit for returns in the case of cinchona to a few years; but, meantime, Mr. Nock would do a public service by experimenting with one or two of his trees and reporting the yield according to age. As, besides the branches, camphor is found in every part of the tree from the root to the leaves, we have no doubt that if the tree is found to grow well, a way will speedily be found to overcome the difficulty of age and we may then find it become one of our more important minor products, with a steadily increasing value as an aid to our staples. Let a fair and full trial then be given to camphor.

NOTES FROM MID-UVA.

June 21st.

As yet we cannot boast of a pucka monsoon. After a few stormy rainy days, we have sultry weather here; today the vast dome overhead is arched and high, and the blue heavens are flecked with silvery clouds. Will it last? If so, the monsoon is almost a failure here, and the goiyas will suffer for want of a sufficient supply of rain, and this means to the native cultivators, privation and poverty.

The Tea Estates look well, the recent high winds, however, have checked the flush; the coolies on most estates are healthy, but where streams are almost dry, and the coolies get their water from pools, full of decaying vegetable matter, there are bowel complaints; bad water, full of feculencies is the very bane of cooly life on some estates in Ceylon, Large tanks of various kinds might be introduced, with great advantage on some estates; and the water given out once a day to the labourers.

There are many Civil Servants in Ceylon in these harsh times, who have retired from public life, in the prime of their intellectual life; what are they intending to do for their native land in their declining years, I wonder, now that they have leisure and settled incomes. I hear one old veteran has a little tea estate near Galle; might he not add an orchard also; how little grafting of fruit trees is carried out in Ceylon, compared with other countries. Might not old civilians take a liking to the cultivation and improvement of the various kinds of tropical fruit trees that grow in our fertile isle; the mango needs greatly to be improved by grafting, &c. Pensioned civilians in India have paid attention for years past to the improvement of fruit trees, have introduced new varieties and spent the evening of their lives in the cultivation of orchards and flower gardens to the benefit of the land of their adoption. Let the Ceylon retired civilians take a lesson from their learned brethren of India and who have retired on pension from public life,

NORTHERN PROVINCE, CEYLON.

(*Extracts from Mr. Hopkin's Report on the Vavuniya District for 1894.*)

Area, 1,062 square miles; Population in 1891, 8,159.

WEATHER, CROPS, AND FOOD SUPPLY.

The year's rainfall at Vavuniya was far below the average, but this is no criterion of the rainfall for the district, for in Kilakkumulai South there was a failure of the north-east monsoon, whilst the tanks filled fairly in other divisions.

Tobacco.—The area cultivated was 114½ acres as against 147 acres in 1893, the people having been discouraged by the great fall in prices obtainable during 1893.

The yield is estimated by the headmen at 661,000 leaves, against 607,200 last year. This does not mean that the outturn was really better this year, but that the estimates of yield were more reasonable. As I pointed out in last year's report, the headmen's figures are very unreliable. The returns for this year show a yield of 5,772 leaves to the acre, but this is still under the mark. An acre of tobacco is valued at R50 to R80, and tobacco of the second quality is worth 50 cents per bundle of fifty leaves. Taking this as the average price for all qualities, the yield would be from 5,000 to 8,000 leaves per acre.

Prices as below:—

			R.	c.
First quality, per 1,000 leaves			20	0
Second quality,	do.	..	10	0
Third quality,	do.	..	5	0

This shows an improvement on the prices obtainable in 1893.

Food Supply.—The food supply was sufficient during the year. There was a little scarcity in Panankamam towards the end of the year, but this was, I believe, due mainly to debt and improvidence.

The total outturn of paddy was estimated at 18,048 bushels, which is, I daresay, nearly correct.

This converted into rice would make 24,024 bushels, or 2·94 bushels per head of population.

To this must be added 9,420 bushels of kurakkan, or 1·15 bushel per head.

Garden cultivation is unknown, except in some Sinhalese villages. A few vegetables are grown in the chenas, mostly pumpkins, cucumbers, and "kecri."

I noticed a fine crop of mustard in a chena in Vavuniya clearing, but this was grown by a Sinhalese boutique-keeper.

NEW AREAS OF CULTIVATION.

Three hundred and twenty-nine acres 3 roods 23 perches of Crown land were sold during the year, the principal item being a block of 200 acres under the Maha Rambaikulam, which was sold to a Vavuniya syndicate.

Survey fees were deposited for 140 acres, and a sum of R1,150·50 as upset price of land applied for.

New Areas Cultivated.

Paddy, Tamil tanks ..	39	0	0	of 2 bushels
Paddy, Sinhalese tanks ..	25	3	8	
Garden lands (Sinhalese)	7	0	0	
Total..	71	3	8	

WORK OTHER THAN ROUTINE.

The experimental garden is the only work which can properly be classed under the above heading. Fair progress was made during the year, and by the end of December fully half the garden was completely cleared and laid out. On September 1st I re-commenced planting in anticipation of the rains, and planted seedlings of mangosteens, nutmegs, guavas, custard apples, Colombo mangoes, and Para rubber, and a number of pineapple cuttings, all of which the Government Agent kindly procured for me in Colombo, and despatched to me *via* Mannar. Some breadfruits, limes, oranges, and crotons were received later from the Government Agent and planted out. From Anuradhapura Garden I received seedling bilimbis, with some shrubs and rose cuttings, and from Peradeniya Gardens two dozen Calcutta guavas. From seeds sent me by the Director of the Peradeniya Gardens I raised in the nursery Liberian coffee, jak, nutmegs, rambutans, bilimbi, avocado pear, and loquats, all of which throve remarkably well: so well indeed that I think it will be better in future to raise from seed, where it is possible, all the plants required for the garden or for distribution.

The Liberian coffee planted is an experiment in which I am greatly interested. Should it succeed (and I am sanguine that it will) the people may be induced to plant and tend a few bushes in their compounds for their own use.

The Ratemahatmaya, who has received some coffee seeds to plant, tells me that there are a few bushes of *Coffea arabica* in Iratperiyakulam, which fruit fairly, but the people do not make any use of the berries, as "there are so few." He has sown a nursery with seeds of *Coffea arabica* procured from Matale, and intends to plant a small garden at Iratperiyakulam with plants of both kinds. I trust it may be a success.

TEA BLIGHT.

Dr. George Watt, who is at present in Assam enquiring into the causes of tea blight, has been making some interesting observations in the Naga Hills upon the wild tea plant. He has found only two blights upon the wild plant, and these the least serious of the many to which the garden plants are subject. Dr. Watt is, therefore, inclined to think that cultivation accounts to a large extent for the prevalence of disease in the gardens. He is of opinion that improvements should be carried out more on the lines of healthy cultivation, better seed gardens, purer (*i. e.*, blight-proof) stock than in insecticide. He also recommends that the jungles should be kept as far away from the tea as possible. One of the most remarkable pests is the "blister blight." Under this plague the leaves become blistered and shining on the upper surface, forming deep, circular pits all over the margin mainly of the leaf, each depression being from one-eighth of an inch to half an inch in diameter. On the under surface these pits appear as swellings or blisters covered with a white grey fungus. Some notion of the ravages of this blight may be gained by the fact that on the gardens of one Company alone 1,500 acres are more or less affected by it. Among other centres Dr. Watt has visited Kohima, Wokla, Mokokchang, Nazira, Moriani and Golaghat. His future movements will include Nowgong. In addition to his investigations into tea blight he has been engaged in botanical work. It has been discovered that the Sau tree, a plant belonging to the Mimoseæ, bears root tubercles—a fact hitherto unknown to botanical science.—*Englishman.*

THE USE OF "PEAT" FOR MANURE AND IN AGRICULTURE.

The following extract from a Queensland paper is worthy of attention by planters and other agriculturists in certain parts of Ceylon:—

ACIDULATED PEAT DUST.

To the Editor of the *Queenslander.*

Sir,—Some time ago some paragraphs appeared in the *Observer* on the above subject, when it was suggested by a correspondent that a most valuable manure for our farmers might be provided by utilising the peat from the bog at Dunwich, instead of the ordinary soil, for night-soil purposes in Brisbane. I enclose a letter on the subject cut from the *Farmer and Stock Breeder* in the hope that you will give it a place, believing that the subject is worth inquiring into.—I am, sir, &c., Q.

Sir,—When other nations are exhausting their soil and natural resources, we should conserve and not waste the immense store of plant food which is being poured so lavishly upon us. Our soil may, by this means, become so fruitful that in ten years it is pos-

sible to treble our food supply and Britain again be self-supporting. We have only to carry out nature's laws to do this, for such is the compensating scheme throughout the products of nature that that which the body does not appropriate the vegetable luxuriates in; and though we cannot create a single atom, we can, by conforming to the conditions of nature, change that which is already created into more useful forms, and convert what looks dead to the eye, and which has served its original purpose, into new and vital forms of usefulness. Nature has provided material in our almost inexhaustible peat bogs, which only require our surplus labour organising to dig out, dry, and prepare with acid, and we have at once the most perfect and complete disinfectant, deodoriser, and absorbent. Night soil sprinkled over or mixed with one-eighth its weight of dry acidulated peat-dust is converted into a harmless black soil, without smell, inoffensive to the eye, clean to remove, and has no danger to health; becomes at once a fertiliser of incalculable value to agriculture, and an untold blessing to the country from a national, economic, and sanitary point of view. The following advantages are claimed for this over any other system:—1. This has the greatest absorbent and deodorising properties, and can be used without mechanical contrivances to either the pail system, the ordinary midden closet reconstructed, or the dry earth closet. 2. The acid combines with the ammonia in the urine, and forms sulphate of ammonia, the most powerful of all manures; in all sewage systems this is lost. In additon to the sulphate of ammonia, the product contains all the other elements necessary to the growth of plants on which we live. 3. The acidulated peat dust, by its acidifying the mass, destroys all germs of disease; bacteriologists have proved that these are destroyed in an acid medium. 4. Peat not only prevents offence in the removal and transit of refuse, but supplies very valuable humus to the soil. Besides this there would be no necessity for such a nuisance as manufacturing manure in towns, as this product may be profitably sent away (without offence) from large towns by either boat or train loads, or by steam tramways, to county depots, which might be established by Country Councils in convenient districts for farmers to reach.—WILLIAM BOWLER, Longsight, Manchester.

We invited the opinion and criticism of Mr. M. Cochran, F.C.S., on the above, and he has been good enough to write as follows:

Referring to the letter of William Bowler in the *Queenslander* on the subject of acidulated peat dust as a sanitary absorbent and basis of a manure, I think his remarks are not unworthy of the attention of Municipal authorities when both the peat and the acid can be had exceedingly cheap, and where there are market gardens to utilise the product. I have no doubt the acid referred to is sulphuric acid, as this is the only cheap acid that would both char the peat, and retain the small quantity of nitrogen in it. Whether the process could be applied with economy to the Muturajawella and Nuwara Eliya peat is another question, seeing the sulphuric acid would have to be imported. Hitherto, I think the class of manures made from the sanitation-products of towns has never been rich enough in fertilising ingredients to admit of other than a short carriage from the place of production to the place of application.

In order to use our own resources of peat deposits for sanitary and fertilising purposes, I think we should have to be contented with drying and charring the peat by heat. Charred peat should certainly make a first-rate absorbent, instead of earth, for the dry system of disposing of excreta. The product might be afterwards used on land near the town either before or after incineration, as might be found more economical. Peat charcoal absorbs all sorts of gases and especially ammonia. According to Stenhouse's experiments ½ gram of peat charcoal (7½ grains) absorbs 96 cubic centimetres of ammonia gas.

It would be interesting to know if anyone in Ceylon has ever tried the effect of charred peat pure and simple on land. It is true that chemical analysis does not reveal much manurial value in peat. Perfectly dry peat won't contain on an average more than 1½ per cent of nitrogen, a large proportion of which would be lost by charring. The ash left by burning air-dried peat varies between wide limits from about 1 to 33 per cent. A large quantity of it has from 2½ to 10 per cent of ash, surface peat containing least ash. Of the ash not more than 1½ per cent of phosphoric acid or 1 per cent of potash could be reckoned on. It would thus seem that charred peat would be rather a poor manure to spread on land; yet we find it stated in "Johnston and Cameron's Agricultural Chemistry" that 50 bushels per acre of charred peat has been used alone for the turnip crop with as good a return as was obtained from 50 carts of farmyard manure. It is not easy to account for a result like this if it was not a case of mistaking *post hoc* for *propter hoc*. The power charcoal has of absorbing atmospheric ammonia could scarcely account for it. We know that charcoal has the power of condensing oxygen in its pores and this oxygen oxidises other gases that are absorbed in a condensed form by the charcoal. If it could be shown, though I am not aware that it ever has been shown, that charcoal has the power of oxidising even to a very small extent the free nitrogen of the air to nitric acid, a plant food, then the mystery would be explained.

Professor Newth in his new book on Inorganic Chemistry 1894 mentions the results of more recent experiments thus "Saussure found that recently heated beechwood charcoal was capable of absorbing 90 times its own volume of ammonia gas; while Hunter by employing charcoal made from coconut shell found that 171·7 volumes of ammonia were absorbed by one volume of charcoal."

All this information from Mr. Cochran is of great importance to our planters and agriculturists and suggests several directions in which experiments ought to be made.

THE AMSTERDAM CINCHONA-MARKET.

June 6th.

Our Amsterdam correspondent, telegraphing on Wednesday night, observes:—"The exports of cinchona bark from Java in the month of May amounted to 462,700 half kilos. In April they were 615,000 half-kilos. On June 13th, 5,691 bales and 239 cases (weighing together 539,230 kilos) of Java cinchona bark will be offered by auction in Amsterdam. The total equivalent of sulphate of quinine in the manufacturing bark is 26,273 kilos, in the pharmaceutical bark 372 kilos. This gives an average of 5 per cent for the manufacturing bark. The May shipments from Java, continues our correspondent, give a moderate figure, and the feeling here is that the total shipments for 1895 will show a smaller figure than for the preceding year; thus far the deficiency is in fact rather marked. The feeling for our bark-sale of 13th instant is rather firm than otherwise, in spite of the heavy supply of bark. The diminished stock of quinine in London is also considered a favourable feature of the position of the two articles, and likely to work well for bark in a short time.—*Chemist and Druggist*.

MORE TEA. Yet another probable rival to India as a tea-growing country! The province of Batoum has been favourably reported on as being suitable for tea cultivation by M. Krasnov, a Professor of Geography at the Krasnov University, who said that, if cultivated, portions of Batoum would compare favourably with the tea plantations of Japan and Ceylon. The Agricultural Society of Russia, which has taken up the question of tea cultivation in Batoum, has instructed Mr. Klugen to purchase large plots of land near Charka. Messrs. Krasnov, and Klugen and some other gentlemen will visit the chief tea-producing centres of the world, including Darjiling, Ceylon, China, Canton and Japan, and they were to leave Odessa for this purpose about the end of February last.—*The Planter*.

Correspondence:

To the Editor.

GUINEA FOWLS.

DEAR SIR,—Will some one of your correspondents inform me (*a*) how long Guinea fowls' eggs take to hatch out, and (*b*) how best to rear the chicks.

ENQUIRER.

THE FIBRES OF CEYLON AND THOSE NOW IN DEMAND.

London, 24th May 1895.

DEAR SIR,—We have to acknowledge receipt of *Ceylon Observer* of 27th April for which we thank you, and are prepared to give anyone who may favour us with inquiries, all the information available in respect to fibres of various kinds.

The experience of manufacturers this season leads them to favour *No. 2 "Pia" and No. 3 "Skin* of palm leaf," &c, rather than the No. 1 Bamboo,—the latter being found brittle in working. We therefore send you duplicate samples of Nos. 2 and 3 only.*

The small quantity of *No. 2 "Pia"* that has so far come to Europe has realised fabulous prices which it would be misleading to quote for later supplies; we consider there will be a fairly permanent demand for this and similar material; from 6d to 1s per lb. appears at present a safe limit, according to quality. It is said that "Pia" is a shaving from the stem of the "*Cabbage Palm*" (?) (the French call it "chou-chou"); but we are unable to say whether this statement is correct.

No. 3 "Superior Raffia" is described as a shaving from the wood of the "*cryptomeria Japonica*" (?)—to us it looks more like the skin of a palm leaf,—similar but superior to the ordinary Raffia, which is the outer skin of the leaf of the Raphia Palm. The latter or ordinary Raffia is not good enough for our present requirements, the present value of the latter is about 5d per lb., the "Superior" (our No. 3) would be worth about double this price if here today; but for future shipments something lower may have to be accepted say from 6d to 9d per lb., but extra good even quality might realise considerably more. We think the demand for this material will be permanent, for several seasons at least.

We also enclose a specimen of "*Rhea Fibre*" *in the Bark* (or *Ribbon* as it is called).* The tendency of this manufacture is to work on the fibre in this rough state, provided it can be supplied in large quantities at low prices, that is, in hundreds or thousands of tons at from £6 to £8 per ton in London. It is said large contracts have been entered into at £7 per ton or less, but we doubt the possibility of getting supplies at this price, and we believe that if any important quantities could be regularly shipped say 100 to 500 tons per month at say £10 per ton cost freight and Insurance terms, or even at a little more, buyers would be willing to enter into contracts, provided a guarantee of regular supply could be given.

We would repeat our suggestion that likely materials of various kinds should be tried and a few lb. of each sent to us for report. Practical trials shall be made of all such as may appear suitable for any of the various manufactures using such materials.

In conclusion we would ask for samples of the *silk cotton* (or floss) from the seedpod of the "*Calotropis Gigantea*" or "*Mudar*" for which a demand appears to be springing up again, present value about 6d per lb. landed in London.

"*Semul*" or *tree cotton* now called "*Kapok*" is wanted in fairly clean condition at 4d per lb. in London.—Yours truly,

THIRKELL & CO.

We referred the specimens to the Principal of the Agricultural School, who writes:—

School of Agriculture, Colombo, June 13.

DEAR SIR,—I am returning you the specimens from Messrs. Thirkell & Co. No. 5 silk cotton from the pod of calotropis gigantea (the Sinhalese *wara*) and No. 6 "Semul" or tree cotton, our kapok or (as it called by the natives) "pulung" are both available in fairly large quantities in the island. The former as a wild shrub is a good deal scattered about the country, but in certain localities forms rather extensive thickets. Still its collection would be somewhat expensive. It has been mentioned as a paper fibre and a silk substitute. Dr. Watt considers that the cultivation of the plant will be profitable, as besides the floss from the pod, it also yields a bark fibre of excellent quality, and gutta-percha from the sap.

The "tree-cotton" is a favourite boundary tree and some trade in the cotton is at present being done in the Matale district, where it is very commonly met with.

Trial shipments might well be made with both the above "cottons" in order to make sure whether exportation to London will pay at the prices quoted.*

Superior Raffia, described as a shaving from the wood of the Cryptomeria Japonica would be difficult to match in Ceylon. It does not seem likely, on trial with screw-pine and yucca, that a substitute could be found, though some research in the direction of the sedges is advisable. The length of the sample sent is nearly 4 feet!†

Pia (said to be probably from a musa or arum) is more likely to be matched. Here is a strip taken at random from a bamboo which is something like it.

Rhea we cannot supply yet, but ought to before long. I have heard of land-prospecting for rhea in the Panadure district. We have about 100 plants flourishing here (at the school) and I hope to send you a sample of our fibre within a month. The sample sent is in a very rough state.

I wonder what Messrs. Thirkell & Co. would think of our *Niyanda* (Sansevieria) and *Muruwadul* (Marsdenia). The latter Dr. Watt considers "far superior to rhea." I enclose two samples from these specimens I have.

PALMÆ.

Kew Bulletin, No. 45, September, 1890.

97. *Raphia Ruffia*, Mart. The midrib of the leaf of this palm, which sometimes reaches 35 to 45 feet in length, is used chiefly for poles for ladies' palanquins, ladders, &c. The fibre from the young unopened leaves is employed as string, and is largely exported to Europe under the name of "Raphia Grass." Various kinds of cloth, which are known as "Jabo," "Jiafotsy," "Sandiadiaka," and "Sikinivola," are

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* These can be seen at our office.—ED. *T.A.*

* There is a considerable trade in "Kapok" sent to Australia, United Kingdom and even India: the exports equalled 2,236 cwt. in 1891, but have fallen off greatly since.—ED. *T.A.*

† Here is a strip of the bark of Gyrinops Walla (Sin. *Walla*) which may perhaps be suitable for the same purpose as "Raffia" though not quite like it,

made from the fibre. From the stem the natives obtain a sweet liquid called "Harafa," and the shells of the fruits are employed as receptacles for various small articles and as snuff boxes. (Widely spread in the island, but always in valleys.) *Rofia* or *Fomby*.

The above is a reference to the palm which is said to yield the ordinary raffia. The "fibre" referred to in this cutting must of course be quite distinct from the material known as "Raffia," and is no doubt of the same nature as "African Bass" the product of *Raphia vinifera* or "Bamboo" palm, noticed on page 3 of the accompanying *Kew Bulletin* (which please return) and also on page 248 of the *Tropical Agriculturist* of October, 1894, under the title of Piassava fibre.

Dr. Trimen mentions *Raphia Ruffia* on page 18 of his "Hand-guide," and again refers to it on page 25 thus:—"Worthy of special notice are the Raphia palm of Madagascar (*Raphia Ruffia*,) &c."

THE "BODIRI" SPECIES OF COCONUT AND HEAVY BEARING.

SIR,—If the species of the coconut reported at Galle be the *Bodiri*, the gathering of so many nuts as reported by your correspondent is no unusual thing, as trees of this species of coconut are known to yield more than the number mentioned at one crop, even when planted with coconuts of different species. The *Bodiri* is a small-sized coconut. D. A.

THE TRAVELLER'S PALM WATER: A TIMELY WARNING.

DEAR SIR,—It will be as well to warn your readers against imbibing the water from the above-mentioned palm, for I yesterday drew off some of the water from one of them into a tumbler, and found it to be infested with a number of thread-like worms. These "poochies" may or may not be inimical to humanity, but it would be as well to avoid the chance of their being so. The warning is not unnecessary, for I have frequently seen persons put down their heads and partake of the water as it gushed from the stem of the tree. E. F. T.

THE FIRST INTRODUCTION OF COFFEE INTO BRITISH CENTRAL AFRICA:

HONOUR TO WHOM HONOUR IS DUE.

DEAR SIR,—In your issue of May there is a statement *re* "the introduction of the coffee plant into Nyassaland which I cannot allow to pass without contradiction, as I am in a position to do so, being well acquainted with the facts. Although not personally acquainted with Mr. John Buchanan C.M.G. of Zomba, still, he has been known to me for at least 15 years, and from all accounts I have heard, I am certain he is too much of a gentleman to take the credit of being the first to introduce the coffee plant into Nyassaland, when the credit belongs to a brother planter. Mr. Johnston must have been misinformed as the parent plant of the thousands now flourishing there, was the survivor of three plants. *C. Arabica* which were taken out by Mr. Jonathan Duncan from the Botanical Gardens Edinburgh in 1878. This plant I believe is still alive at Blantyre. I may also inform you that this same statement was made by Mr. Johnston when in Scotland last year, but was contradicted in a local paper by a correspondent in Nyassaland who no doubt like myself was in possession of the real facts. By giving this a corner in your next issue you will greatly oblige.—

Yours &c., D. B. CAMERON.

South Sylhet, India.

CINNAMON PEELERS AND THE DIFFICULTY OF GETTING THEM HONESTLY TO FULFILL CONTRACTS:

THE OPINION OF AN EX-CINNAMON PLANTER.

SIR,—I was greatly interested in reading in the *Observer* of the 22nd inst, a record of some recent proceedings, in the Police Court of Negombo, in certain cases instituted by the Superintendent of Goluwa Poknna estate against defaulting cinnamon peelers; the Magistrate's decisions thereon; and your editorial upon the whole matter. Having suffered myself from the misconduct of "peelers" my sympathies went out at once to the Cinnamon Planters who, by the decision of the Magistrate, are left helpless against the wiles of the unscrupulous peeler. Their position hitherto has not been an easy one, and now it is made more difficult; if, indeed, it will not make cinnamon cultivation on estates so precarious as to render it profitless. To any one acquainted with the preparation of cinnamon it will be apparent that the first requisite is the certainty, as far as it can be made so, of the command of a sufficient force of skilled peelers at the times when the bark is in a fit condition to peel from the sticks. But if with the dread of a criminal prosecution and imprisonment for breach of contract hanging over them many now evade their responsibilities, what may we not expect will be the state of affairs when it becomes known that by breach of the contract and being once punished they can go free; or by evading the notice to come to work they can defy the Superintendent? I need not enter into a description of the conditions under which cinnamon cultivation and preparation have hitherto been conducted, as that has been done in a full and accurate manner by the gentleman who supplied you with that information in your editorial of the 22nd. I will only briefly narrate a few of my experiences with reference to defaulting peelers and make one or two observations. As Superintendent of Goluwa Poknna estate for nearly six years I had a surfeit of this kind of work: the most distasteful, and yet the most imperative, I was ever called upon to perform.

When I first entered upon my duties I I knew next to nothing of cinnamon cultivation and nothing at all of preparation; and worst of all I was quite ignorant as to the character of the cinnamon peelers as a class: but knowledge came in time! My first enlightment was on the occasion of giving out fresh advances. I had been instructed to increase the peeling force so as to make certain of having more than sufficient, allowing for a fair proportion of absentees, and gave orders to the kanganies to look out for men. As far as numbers went I had no reason to be dissatisfied; but when peeling time came not half of the new hands turned up. After a reasonable time I took out warrants against these men and then learnt that a good many were fictitious names, others those of children, and of men who had never peeled a cinnamon stick. The kanganies to get money for themselves had hired men, at 50 cents a piece, to appear and sign the contract, receive the advance, and then hand it over to them. Kanganies and men thus combined to defraud the estate, and also to jeopard the crop. In time this state of affairs improved by the weeding out of notoriously bad workers, but to the end there were always a certain number of men who took advances with no intention whatever of working them off. They

either cleared out from their village and disappeared for months together, visiting their homes by stealth; or they were screened by the kanganies and headmen, who returned the warrants with the remark "not to be found", &c. I partially overcame this difficulty by making it worth the headmen's while to find the defaulters; and remarkable to say, coincident with this arrangement many of the men returned to their village! I have had to institute as many as 100 cases in one day, and quite 200 within a year! Let any one consider what this means, namely, that out of a skilled force of say 300 men, which you have done your best to make sure of by giving out advances on a contract, you find that when your peeling is at its best, and you could secure a large quantity of fine bark, quite one-third of your force absent themselves; not because they have any excuse for doing so, but that they are working on some other estate, where they have also taken advances, or are taking in the cinnamon from their own or a friend's few acres. When this is done, and the best of the season over, they *may* condescend to come and work for you, making lying excuses for not having come before, the kangany backing them up, for as likely as not the men have been taking in the cinnamon from his garden, while the Superintendent is at his wit's end to know what to do to secure his crop. Such a state of things is exasperating, for when kanganies and men combine to deceive, you are helpless. I am afraid that their conduct has often caused me to explode, and to use words not necessary to the sentences uttered; and if the kanganies had had anything but pachydermatous consciences they would have winced under the home truths told them.

In instituting cases against defaulting peelers, I have had to appear before 9 different Magistrates who occupied the Negombo bench in succession during the time I was on Goluwa Pokuna, and all held that if a defaulting peeler, after undergoing punishment, did not go back to work he was liable to be again brought up and punished: the offence was considered a continuing one.

The present Police Magistrate of Negombo seems to doubt the legality of this procedure; and as his decision has quite unsettled the previous views held on the subject, and his successor may disagree with his views, I think it was unfortunate that the Attorney-General did not allow an Appeal in case No. 19,217, as I understand he was asked to do. In the interest of the peelers themselves a ruling by the Supreme Court seems necessary; and it is much to be wished that the Attorney-General would reconsider his objection, as regards giving notice to peelers to come to work. As a matter of fact, at the commencement of peeling every peeler receives notice to attend; also at the resuming of work after each stoppage; but when men are away from their villages it is not possible to give them notice, for their whereabouts are often not known; and when these men absent themselves for weeks or months, and on their return are prosecuted, for the Magistrate to discharge them on the plea that they were not served with notice to attend seems to me unreasonable. Giving notice is really a matter of form, for every peeler knows perfectly well when his services will be required, and when he should attend. When dealing with men who have no fear of losing their character or influence in their village by its being known that they have made money by *successful* fraud—but who are rather looked up to and envied as clever fellows—it is, I hold, necessary when advancing money for which they are responsible, to make them criminally liable. This may seem hard; but if a cinnamon peeling kangany is to be held only civilly liable for the money advanced to the men he brings as peelers, there is nothing to prevent his acting in the fraudulent manner I have described as practised on me, and the Superintendent has no remedy; for it is next to impossible to bring home the charge to the kangany, as none of his peelers would have the temerity to dare give evidence against him, knowing full well that to do so would mean his ruin. I have stated that prosecuting peelers and getting them put in jail was most distasteful to me, and in dozens of instances I have taken them back on their promise to return to work. The Magistrate often cautioning them not to break their word; but this leniency was so systematically abused by the men never coming to work and so necessitating fresh warrants being taken out that I afterwards, as a rule, refused to take them back before they were punished. I found that severe measures were the kindest to them and to others. Cinnamon peelers may not be worse than others of their class under like temptations, though some of their countrymen seem to think that they are, for they use this saying against them:—"Never trust a Haleya or a pig!" Be that as it may, their conduct was the main motive for my leaving Golnwa Pokuna; and I envy no man who has to make his living by depending upon them. Apologising for taking so much of your valuable space.—I am, &c.,

W. J.

AUSTRALIAN HONEY FOR CEYLON.

June 5th.

DEAR SIR,—I enclose a short account of the Grampian Apiaries, Dunkeld, Victoria, which has been sent to me, and as I am trying to introduce Victorian honey here, I thought it might perhaps interest your readers to learn something about the industry.—Yours truly,

PROGRESS.

[We can speak of the Australian honey as being excellent.—ED. *T.A.*]

BEE-FARMING IN AUSTRALIA.

Next to the world-renowned deep mining of the Golden Cities of Ballarat and Bendigo in Victoria and the gigantic search for silver from the equally deep mines of Broken Hill in New South Wales, there is perhaps no industry contributing to the original wealth of the community, which so fascinatingly appeals to the interest of the visitor to the Australian Colonies as does the culture of bees both by the Arcadian charm of its surroundings and by the novelty of its workings. Of all those parts of "the continent," as the Australians like to call it, where the professional Apiarist is wooing "the fickle goddess" with his stock-in-trade, the Victorian Valley is at once one of the best adapted by nature and decidedly *the* most widely exploited for the production of honey on a commercial scale. With the advantage of the dry and sunny climate common to the whole of Southern Australia this district is protected by mountain ranges from great extremes of temperature and is peculiarly suited by the comparative poverty of its sandy soil to the brilliant display of a great wealth of blossom on those trees and shrubs from which the bees can most economically gather their supplies in their work of laying up a winter store.

Leaving the train at the little way-side station of Dunkeld after a tedious journey from Melbourne at a speed which at its best would hardly equal that of a modern Atlantic liner, ten hours having been taken to cover one hundred and eighty miles! and proceeding in a buggy across country to the Northward, one's sense of beauty is soon agreeably impressed by the generally park-like aspect of the Plain with its undulating paddocks irre-

gularly studded with splendid flowering specimens of the red and white gums and acacias. Cheerily bowling along a well-kept road and rapidly nearing the lofty peaks of Mt. Sturgeon and Mt. Abrupt, which rise precipitously on either hand for several hundreds of feet, the visitor's attention is attracted to the opposite thickly wooded slope of "the Picaninny," stretching picturesquely between the rocky heights of its frowning neighbours, and which on its lower levels is patterned in clusters of white half hidden by the green of the bush, recalling the well filled cemeteries of the malarial coasts of Africa. Even a carefully guarded question invokes a supercilious smile from the driver over the "new chumm's" innocence with the information that the apparently marble grave-stones flashing back the sun-light are merely the painted hives of the Bee-Farm. A little later further evidence is forthcoming by an all-pervading drowsy hum, ever increasing till the Farm is reached, when the air is seen to be so alive with excited bees as to cause considerable feelings of alarm in the mind of the visitor. With the welcome protection of a veil, supposedly sting proof, and affecting a *sang froid* which he is far from feeling the novitiate accepts, though with doubtful pleasure, the invitation of the Manager to watch the robbing of the hives, a form of entertainment which he will appreciate only till some more tender part of his anatomy is pierced by the far reaching stings of a few particularly savage and persistent bees.

The hives are built up of several layers of rectangular wooden cases, the two lowest of which are set apart for the "brood nest" where the "Queen" deposits her eggs and the young bees are hatched; above these are the "supers" for the storage of honey "beyond" that required by the bees, a specially perforated sheet of zinc between the "brood nest" and the bottom "super" being fitted to bar the access of the Queen-bee but allow that of the smaller worker bees.

The "supers" are arranged to hold thin oblong "frames" or square thick "sections" to form receptacles for the honey according as it is required in its viscous extracted state or in a complete comb for table use; in the former case the honey is removed from the frame by the centrifugal force due to rapid revolution round the vertical axle of a cage into the groves of which the frames after removal from the supers to the honey-room are placed for "extracting."

The comb of the frames, which is about one inch in thickness, is emptied by this means without being in the least degree injured, hence the frames are at once available for being refilled by the further industry of the bees, altogether a great saving of their time and labour on the old system of breaking up the comb by hand for the extraction of the honey which involved the building of new combs every time of honey-getting.

The number of supers varies from one to three depending on the strength of the colony; and in what the Apiarist calls a good "honey-flow," each super or set of supers yielding thirty to sixty lbs. will require to be emptied once in seven to ten days. From the extractor the honey is drawn off and passed through wire strainers of fine mesh into large iron tanks of several tons capacity, of which the interiors are painted with beeswax; in these tanks the honey is allowed to stand for several days that all minute particles of wax may rise to the surface and be skimmed off, after which there only remains the work of putting up the honey into differently sized tins and the wait for a rise in the market, often in these days of Victorian repentance for fiscal sins of the past, the most trying experience of the Apiarist.

But, of all one learns in the course of an object lesson from an expert on Bees, of the most absorbing interest are some points in the natural history of the Queen-mother and the way she governs; her remarkable fecundity which amounts to the laying in the height of the season of from three to four thousand eggs a day; her discriminating power exercised in depositing at will eggs of workers, drones, or queens, each in their special cells; the royal demands she makes upon the attentions of the workers to her sufficient feeding and warmth and the general distress occasioned throughout the hive by her removal; these, together with the curious relations of the sexes in the internal economy of the hive, in that all the workers, warriors and law-makers are female endowed with a plenitude of power over the luckless drones or males, almost comparable to that among men to which soar the dearly cherished aspirations of the most rabid women's rights society, are some of the features which almost beguile into a deeper study of the habits of bee-life.

From the unlimited supply of bee-food scattered broad cast over the land, from the length of the bee season, practically from September to May, through which the blossoms last and the bees can work and lastly from the abnormal disparity between the honey values quoted in the English home market and the cost of its production here, even enhanced as it is at present by the evil effects of a prohibitively high tariff, it is evident on the face of it that under ordinarily favourable conditions of transport there is a great field for the expansion of this industry in Victoria.

There can be no doubt in fact that with its many advantages this Colony can in this respect successfully compete with California or other of the Americans, and that were only the excellent quality of the honey produced sufficiently known in Europe, the yearly output would quickly increase to the tune of several hundreds of tons and the retail price there become so reduced as to bring the luxury of its daily use within the means of the toiling masses of the great cities of the Old World.

THE RUSSIAN TEA COMMISSIONERS IN CEYLON.

On board steamer, 3rd June, 1895.

Dear Sir,—Totally unforseen affairs hindered me in my travelling, and when I returned to Colombo, I only just had time enough to fulfill some very urgent business and get on board the steamer in time before it sailed. In this manner I was deprived of the possibility of seeing you again. This was a double grief to me as it would have given me the greatest possible pleasure to see you once more as I should very much have liked to have narrated to you all my experiences and to have had the pleasure of hearing your valuable opinion about them.

As a matter of course, on my returning from China and Japan to Ceylon, my first visit will be to you. But now you must allow me, although it can only be by letter to thank you from the bottom of my heart for all your kindness to me and for the active help you gave me in my mission, thanks to which help I was enabled in a very short time to examine several large tea estates, and collected some most costly material for studying the tea business in the most advanced and modernized tea-country, which no doubt Ceylon is in comparison with any other tea districts of India. The European art, the amazing energy, the ingenuity, the expediency and practicalness, that is to be seen in the organisation of the total management as well as in respect to all the technicalities of the business, struck me as being most wonderful. I add in conclusion that the Planters received me everywhere in a very kind and hospitable manner and with the greatest readiness showed me their business; communicated to me a whole quantity of useful knowledge, obtained by many years practical experience, all of which was of the greatest value to me.

I should like to have once more the opportunity of shaking hands with those clever planters, who were my first instructors in tea matters and to whom I shall always feel exceptional and thankful acknowledgment.

In the hope of seeing you again, I remain,
Yours very sincerely, JOHN KLINGEN,
Chief of the Russian Expedition of the Appanage.

P.S.—I examined the following estates:—1. Abbotsford, 2. Dessford, 3. Naseby, 4. Scrubs, 5. Pedro, 6. Oliphant, 7. Monkswood, 8. Kandapola, 9. Portswood, (the last 5 by the letters of introduction from the Russian Consul, Mr. Frisch), and 10 Peradeniya Estate.

YOUNG PLANTERS AND PROMOTION: A COMPLIMENT!

C. P., June 20.

DEAR SIR,—Have you heard the latest news? Visiting as well as Colombo Agents now-a-days, in filling up Superintendentships, are particular in asking about the "tastes" of applicants. One of these young men, puzzled as to what was meant by the query, replied—"Well I'm a regular reader of the *Ceylon Observer*, and its monthly *T. A.*"; and at once got the rejoinder—"That will do, you are the man to look after an absent proprietor's interests" and so got the post! Yours truly, FACT.

PRACTICAL ENQUIRIES ABOUT TEA FROM A SOUTH OF INDIA PLANTER.

DEAR SIR,—Will your tea authorities kindly state the probable results on the quality of the manufactured tea when the roll is slowly broken up before fermentation. Would any other effect than irregular fermentation result?

What effect has the late weather had upon the quality of the tea made?—Yours faithfully,

PLANTER.

TEA PREPARATION—QUERIES ANSWERED.

1,600 ft. Elevation, June 20th.

DEAR SIR,—*Re* "Planter's" enquiries—I do not think the slow breaking up of the roll would have any beneficial effect on the quality of the tea. At this elevation, with the long rolling now common in Ceylon, the leaf is, as a rule, almost ready for the drier on being taken out of the roller, and any process that would retard the firing would tend to make the liquor soft.

In the very dry weather before April the teas gave a thin, harsh liquor, with some flavour, and with a greenish, mixed outturn. In the rush of leaf after the April rains the liquor was dark, dull, and pointless, with a dull outturn—the unfavourable weather for withering may have had something to do with this. Lately the teas have given a fairly thick, bright liquor, with strength and fair flavour, and a bright even fermentation.—Yours faithfully, J.

ANTHRAX AND CARBUNCLES.

Colombo, June 25.

DEAR SIR,—The Malay planter's knowledge of Anthrax is very limited I am afraid. Anthrax has *no* relation whatever to "Carbuncle" and cannot produce Carbuncle, but does in man produce that fatal disease Malignant Pustule.—Yours truly, J. WILSON BARKER, M.R.C.V.S.

SHOULD CEYLON—AS THE CENTRE OF TROPICAL PLANTING LANDS—HAVE AN "EMPLOYMENT" OR "LAND EXCHANGE" BUREAU?

Among the Hills, June 28, 1895.

DEAR SIR,—I have been very much struck of ate, with the many countries and varied planting interests you seem to touch upon in the *Ceylon Observer*.

I have not been long in Ceylon; but in one week, I have seen correspondence in your paper giving planting news or asking for information from Florida, North Carolina, Jamaica, Central Africa, the Malayan Peninsula, Labuan, Borneo, &c. Now, it has struck me that something like an Employment and Land or Exchange Bureau might well be opened in your columns, to afford young men, who have been trained in Ceylon, the means of knowing where their services are required in other tropical lands, or where a little capital could best be invested to advantage where good land is available and cheap, &c.—Yours truly, JUNIOR PLANTER.

[Our correspondent must know that it is our monthly issue of the *Tropical Agriculturist*—that forms the special bond of union between all subtropical planting countries. We are quite open to take up our correspondent's suggestion; but the first move ought to be on the part of owners of available cheap lands—whether Governments or private individuals—in other countries, and of proprietors wanting young trained Superintendents, or working partners with some capital. We should readily devote a column or a page of the *T.A.*, to such information, making a very nominal charge for the advertising. We suppose something of this kind is what "Junior Planter" means?—ED. *T.A.*]

LIBERIAN COFFEE.

DEAR SIR,—Can you or any of your readers interested in the growth &c. of this coffee, supply information much needed in the infant stage of the cultivation of this product. What is the best distance to plant? 12 ft. × 12 ft. or 10 ft. × 10 ft. as in the Straits, Perak, &c. The price of specially made pulpers is too high for small clearings varying from 20 to 30 acres. Can cleaning machines be obtained, as used in America for cleaning the dried cherry? Is it preferable to sell the parchment or the clean coffee? Some say the price of clean Liberian is the *same* as that obtained for clean or "rice" coffee per cwt, and that in the native market! Is it so? I have trees 20 months old averaging 700 cherries! At what age and before manuring are they likely to give 2,000—the tested yield in Madagascar and Penang—; lastly is topping objectionable? If so why? YOUNG COFFEE.

[This correspondent is pretty well answered beforehand by "L. de S.",—given below—and from the Colombo Iron Works, he would no doubt learn all he requires about pulpers.—ED. *T.A.*]

LIBERIAN COFFEE CULTIVATION.

SIR,—A very interesting letter recently appeared giving particulars of yield in Serdang of this variety of coffee. The letter came from an old Ceylon coffee planter, and therefore, carries much weight. At present the clearings in Ceylon in bearing are few, and of these but a small number are properly attended to. Extended cultivation is going on quietly, but too slowly. Ceylon tea averages 7½d now. What will it be five years hence? When Arabian coffee began to fail, the cry was that planters had only one string to their bows, and then many products were recklessly tried. In Liberian coffee there is money to be made even if the yield is less, per, tree, than in the Eastern States. The yield per tree varies there from 2,000 to 6,000 cherries. A bushel holds 8,000 to 11,000. The early berries are larger here, as in the Straits. Taking 10,000 cherries as the average per bushel, and with trees in Ceylon planted 6 ft. × 6 ft. or 7 ft. × 7 ft. and yielding only 1,000 to 3,000 cherries, it is possible to obtain in parchment *at least* 20 bushels per acre. At R10 to R12 per bushel present local rates, which are never

likely to be less for another ten years at least, there is an ample return, after meeting expenses, to give R100 to R150 per acre.

The cultivation has, of course, to be carefully carried on, and those who do not do it "on the cheap" will probably get nearly *double* the above yields. In poor soils I would advocate 5½ to 6 ft. apart, and in rich soils 7 to 8 ft., and not more *in Ceylon*. Good 2-ft. holes cut in poor soils and 18-inch holes in better land. Surface soil conserved and filled in. No dibbling and careless planting. Transplanters freely used for vacancies. Dadap and jak shading should be commenced early. Coconut or cocoa should also be put in. Much will depend on the climate, lay of land, &c., which of these auxiliary products will be selected. In some cases both can be planted at proper distances. Eventually such a thing as abandoned plantations will hardly be known. Hitherto Liberian coffee will be the favorite till some hybrid takes its place. It is not necessary to look for another variety as long as this kind gives an ample yield and fetches good prices. In a year or two more there will not be wanting positive proof of this. Judging by the appearance of certain fields, the proprietors of which are "ticking down the costs, &c., to a cent," and when found equally paying, or as nearly paying as the plantations in the Straits, &c., then there will be, no doubt, "the rush".—I am, &c.,

Panilwewa, June 29th. L. DE S.

VARIOUS PLANTING NOTES.

Failure of the Orange Crop in Florida.—One of our *Tropical Agriculturist* readers in Florida, writing by last mail, reports :—

We note on p. 663 that mention is made that the orange crop of Florida will not be over 2,500,000 boxes. We only wish it would be that large. We doubt if there will be 50,000 shipped from the whole state. As to lemons there will not be 1,000 boxes.

Dr. D. Morris, C.M.G., on the Canary Islands.—In the course of an interesting letter from our old friend Dr. Morris, who continues to take a great interest in Ceylon, he gives us the following useful, not to say interesting, information :—

"'The 'fibre lectures' will be published in full in the 'Society of Arts' Journal' in July and August.—I am glad to say I keep very well. I take my vacation in the winter and have lately visited the Canary Islands. They are charming places to go to. It is wonderful what English enterprise is doing there. The islands supply England with nearly all the bananas consumed in this country as also tomatoes, early potatoes and green vegetables. Geographical position is the essential factor in these matters.—We were very sorry to hear of Dr. Trimen's ill-health. We hope he will pick up during his stay in this country."

A Camphor Tree Industry.—Exactly the same sneering objections as the local "Times" ventilated on Thursday, were offered at the beginning of our cinchona enterprise. "Who would care to cultivate a medicine tree?" was the cry; but how bitterly the scoffers regretted their attitude when the planters who put in a few hundreds or thousands of plants, cut them down or harvested the bark after 7 or 10 years—the cultivation costing nothing—and netted as much as 10s to 20s per tree. Now, in respect of the camphor tree, we are told, Dr. Trimen some years ago, discouraged its cultivation by planters; but surely the fact that there are successful clearings *now* of the tree at both Peradeniya and Hakgalla is sufficient to indicate that Dr. Trimen, were he here, would probably alter his opinion, that is *if* he ever expressed himself as our contemporary says. In any case, it is childish to discourage planters who are busy putting out trees of various kinds on their boundaries or among their tea, or in separate patches, from giving a trial to the handsome laurel-like camphor tree, plants of which are now available at the Botanic Gardens. In this journal, our readers can see what American and English journalists—taking opposite views—say about the prospect. Our local contemporary in place of discouraging ought to feel it his bounden duty to do all in his power to get planters to add any likely product to their one string "tea"; and the fact that the Chinese and Japanese have been cutting down their store of indigenous trees, without replanting, is just the strongest reason why Ceylon planters should begin at once to try what cultivation can do.

Tea Planting in Burma is the title of an article in the *Asian* which discusses the question "may not Burma one day take her place among the tea-producing countries of the East"? The following is the concluding paragraph :—

"Planting in Burmah has not been conspicuously successful hitherto. Liberian coffee did well in an experimental garden at Mergui, when supervised by an energetic Deputy Commissioner, but attempts at planting on the Tavoy hills proved a failure, despite the liberal terms given by the local Government to enterprising men who took up land for the purpose. Tea, if we mistake not, has never got beyond the purely experimental stage, and Mr. Bruce's very interesting report, if it does not open up a rosy vista of opulent possibilities, at least *gives food for thought*."

Tea Factories; Steam Engines; Turbines and Electric Light Installations.—A planter in sending in information for the Directory states :—

I don't know whether you require a memo of steam engines &c. on estates which perhaps in a Directory would be useful and if so :—there are two here, one 6 h.p. and one 12 h.p.—and water power—electric installation in factory and bungalow.

Now the fact is, we shall be glad to have a note of the power of every Steam Engine and Turbine on plantations, and also a note of wherever the electric light has been installed. We trust, therefore, many more will follow the example of the above correspondent. We have already got most of the information. We have always separately specified Tea Factories preparing from 590,000 lb. and upwards in our prefatory review.

Coffee in Brazil.—The committee of coffee factors appointed for estimating the crop for the year 1895-96, reports as follows :—"Heavy rains during the last three months have contributed to hasten development of seasonable and late fruit, but have hindered the production of *café das aguas*, which is almost a total failure. The committee accordingly believes that the future crop will be of good quality unless injured by rains during the process of gathering and drying. The quantity of available for exportation will, it seems, hardly exceed 1,750,000 bags, subject, however, to be increased by the remainder of the previous crop, whose shipment is delayed by various well-known causes. In addition to the lack of efficient labour, agriculture continues to suffer from insufficient transportation facilities on railways, which, although they regulate their freight rates by a sliding scale varying with the fluctuations in exchange, fail to offer safe, speedy and regular means of conveyance either for imports or exports, thus increasing the cost of labour and even occasioning periods of famine in certain localities in consequence of the death of food-stuffs. This committee, then, in the performance of its duty calls the attention of the proper authorities to the just complaints of the planters, who require sure and speedy means of transportation and the actual responsibility of someone for the number and weight of the packages delivered here or in the interior.—Rio de Janeiro, March 19th, 1895.—*Joaquim de Mello Franco.—César Duque Estrada & Co.—Miranda Jordao & Co.—Araujo Maia & Co.—Hermano Joppert.*"

Old Ceylon Residents and Fiji Estate Products.—Mrs. James Dickson, the wife of a former Ceylon coffee planter, was at Colombo yesterday on her way to Fiji by the s.s. "Prinz Regent Luitpold." Mr. Dixon has a sugar estate, Navua by name, coffee having gone under there as in Ceylon, owing to leaf-disease. With the beet cultivation in Europe and elsewhere cane sugar manufacturing is also but a wreck of what it was, and a number of planters in Fiji have turned their attention to such other products as tobacco and tea. The greater cost of Tamil labour, brought there from India, however, has prevented the tea planters from competing profitably in the world's markets; and consequently tobacco cultivation appears to be the most promising one of those mentioned. Fruit cultivation, it seems, has also been resorted to considerably, because we were informed that Fiji already supplies Australia with all the bananas that country required, and also with a large quantity of pine-apples. There are still a number of former Ceylon men in Fiji.

The Tea Trade in Australia.—Mr. Thomson, of the firm of Messrs. Finlay, Muir & Co. returned to the Island by the "Arcadia" this week; but he has little information to afford as the result of his fortnight's stay in Melbourne and Sydney as inspecting agent for Messrs. Finlay Muir & Co., The taste for British-grown teas, he says, is undoubtedly growing; but he does not anticipate a very great increase in the near future, nor has there been a very marked one in recent months. His view is a decidedly pessimistic one. Three years ago, before the boom the Colonies were in a very different condition from what they are now, and, when one of our representatives said to him today: "The press of Australia tells us more of the sport there than it tells us of colonial commerce, he replied: "That's just it; the principal products of Australia at present are the horse and the book-maker." All the same, he thinks, British-grown teas are going ahead down there, though how far Sylhet and Finlay Muir teas are progressing he would not say. Mr. Thomson will remain for the present in Colombo.

Commercial Fibres.—Dr. D. Morris, in a series of Canter Lectures before the Society of Arts, when reviewing the fibres of the palm order, recently drew attention to the remarkable vegetable substance, resembling whalebone in strength and elasticity, called bass or piassava. This was extensively used for making brooms and brushes, and consisted of the indurated fibre bundles thickly clothing the stems of palms. The fibres yielded by the husk of the coconut were of considerable commercial importance. They afforded material for brushes, mats and matting, cords, ropes, and tow. Coconut refuse, on account of its wonderful properties of absorbing moisture, had been recommended for use as a backing material for steel plates in the construction of men-of-war. Of all vegetable substances the most noted substitute for horsehair was the fibre of the Spanish moss (*Tillandsia usneoides*). The plant grew in long, hanging tresses on cypress trees in the swamps of the Southern United States. The supply of material for paper-making was becoming more dependent on wood pulp. The lecturer concluded the course by discussing in some detail, problems connected with the introduction of new fibres, the improvement of fibre plants by systematic selection and cultivation, and by a general review of the methods hitherto adopted by mechanical and chemical means for the extraction of commercial fibres.—*Chemical Trade Journal*, May 11.

A Visit to North Travancore.—Mr. G. D. Brabazon of New Peacock, Pussellawa, and Mr. J. Coles of Ruanwela, returned yesterday (2nd) morning from Travancore. Both gentlemen speak highly of what they saw in Travancore. The climate, the soil, and the tea—though of this in bearing there does not appear to be much in bearing at present—all beat those of Ceylon; and the outlook for the district is in every way excellent if only the labour difficulty can be got over and better outlets provided for produce. While staying with Mr. Knight, Messrs. Brabazon and his companion paid a visit to Mr. Benzie, who, it will be remembered, was got up from Ceylon by Messrs. Finlay, Muir & Co. to trace an outlet from their new property to Cochin on the west coast. The journey from Colombo to Travancore does not appear to be a very formidable one, and Mr. Brabazon declares that it is possible, within forty-eight hours after leaving Colombo, to reach the portion of Travancore he visited, the route being by B.I. steamer to Tuticorin, then by rail, then on horseback by road to the foot of the ghauts, a stiff ride up the ghauts, and you are at your destination in a beautiful climate, very much like that upcountry in Ceylon, but a good deal drier. The country Mr. Brabazon went over ranged from 2,000 to 8.000 ft., at which elevation, it is needless to say, it was "considerably cool." Though some of the land was very steep and broken, a good portion of it is undulating country, of patana interspersed with blocks of jungle, very similar to the Uva country, though the visitors declare that Rravancore grass land is much superior to what we have in Ceylon, the short grass there being suitable for grazing purposes, and, as far as could be judged, as well adapted for tea as a good deal of the jungle in Ceylon. The jungle soil is pronounced to be splendid, and the little tea that was inspected, though not of the best jât, was doing excellently; the cinchona, of which there is still a little left in the district, though it was steadily coming out, was in very good heart: and at the lower elevations coffee promised to do very well. At the higher elevations Mr. Brabazon thought it possible that the frost they have occasionally there might damage the tea, but in every other respect he was wonderfully struck with the suitability of the country for its cultivation. As stated above, however, there is a difficulty about labour, and it is this that has decided Messrs. Finlay, Muir & Co. to, at first, only open a small portion of their twenty square miles of land, beginning with about three nhundred acres and opening about ten thousand withita the next three or four years. This will be only small portion of the virgin jungle which covers about half the enormous acreage they have purchased. They hope to work up a labour force by degrees and, no doubt, they will be as generous in the matter of advances and rates of pay as they are known to be in Ceylon. The coolies in Travancore, who are all Tamils and are recruited from much the same districts as our own in Ceylon, seem to work on a very different system to the latter. They are advanced money in just the same way as are our own but, on arrval at the estate, they proceed to work the advances off at once and, as soon as this is done, they clear off apparently without much further ceremony, leaving the planter without any labour unless he goes on sending fresh advances out for more coolies. The coolies there, too, have the same objection to go to newly-opened land that they have in Ceylon, and altogether there is undoubtedly hard work to be done before Travancore planters put their labour supply on a firm and permanent basis; but Messrs. Finlay, Muir & Co., who are the principal—and nearly the sole—proprietors in that part of Travancore, have immense capital at their back, and are determined to persevere till they have brought their fine and extensive property under tea. If they succeed in doing this in the near future, it will undoubtedly throw a large amount of tea on the markets of the world to swell the already big total from India and Ceylon, and, as they procure their labour force from the same parts of South India as Ceylon planters do, their competition cuts in two ways. But this cannot be helped, and the only way to meet it is for us to increase our endeavours to open up new markets. and to grapple practically and speedily with the labour supply difficulty. Mr. Brabazon and his companion speak highly of the main roads in Travancore, which are kept in excellent condition, though they seem to require little attention compared to what our roads up-country do, owing probably to a lesser rainfall and to the superiority of the soil there for road purposes. One road Mr. Brabazon went over, and which was in first-rate condition, had not been repaired for some five years.

NATIVE ENTERPRISE IN TEA.—It may be judged that we have fully entered on a native era in tea when we are told of an ordinary Sinhalese proprietor near Amblangoda, booking with a Colombo Firm, for 5 maunds of tea seed at R135 per maund, and in order to make sure of the seed, offering to pay three-fourths of the money down.

CINNAMON.—A report on the London Quarterly Sales held on 27th May, will be found elsewhere; there was keen competition and better prices, and surely the improvement should continue with limited stocks, and the troubles out here this year with "cinnamon peelers" and an erratic season?

TEA CULTIVATION IN SOUTH CAROLINA.—Mr. Shepard, the pioneer of Tea cultivation in the United States, is a regular reader of our *Tropical Agriculturist.* In a letter just received from him about his "T.A.", he adds,—

My little tea-farm is coming along very nicely, and is generally regarded as a success. But I want the experience of a few more years before making that claim myself.

"CANNOT WE AUSTRALIANS GROW OUR OWN Tea" is asked in an editorial note in the Melbourne *Herald.* Reference is made to the growth of "Chimonanthusiragrans" in England and the writer says that "the project to grow tea in Australia, a contingency which would make the continent self-contained, does not imply anything like breeding polar-bears at the equator!" But to grow tea to pay, cheap labour is indispensable and also a good deal of rain well distributed.

THE NATIVE TEA PLANTING INDUSTRY is rapidly extending and the amount of money spread among the people in the Gampola, Nawalapitiya and Matale valleys, in consequence, is very considerable. One calculation said to be a safe one, is that not less than 2½ to 3 million lb. of leaf from native tea gardens will be bought this year by the factories in and around Gampola and Nawalapitiya. Then there has also been a very large amount of money paid away in these and adjacent districts to the Sinhalese for plucking on the regular plantations; but the people are so well-off now that it is difficult to get them to come to work where, a few years ago, they were begging for employment!

CINNAMON IN DYSENTRY.—We draw special attention to the following paragraph from the *Lancet* together with the note of the editor of the *Pharmaceutical Journal* :—

Surgeon-Major Avetoom has found the administration of a bolus of a drachm of powdered cinnamon bark taken morning and evening, washed down by a mouthful of water, very successful in thirty cases; observations were extended over a period of two years, ordinary cases were cured by one or two doses, the worst by six administrations (*Lancet*, March, 1895).

[These results would render the trial of cinnamon oil or cassia oil in suitable doses interesting, the therapeutic result would probably be the same and would obviate the necessity of swallowing a large amount of inert "woody fibre."]

The other day we reported the wonderful effects of cinnamon in so-called cases of cancer. Now Ceylon is the special home of cinnamon, and it boasts of medical men of no mean reputation. How is it that one of them—say Dr. H. M. Fernando, M.D., B.SC., London, Fellow of University College, does not give the world the benefit of original experiments with cinnamon, and tell us for the good alike, of European and native sufferers, whether the spice is of the value ascribed to it above and in threatened cancer.

THE VALUE of land in Kuala Lumpur so signally depreciated some four years ago is now reported to be as high as ever. The value of house property is also said to be undoubtedly greater than it has ever been.—*Pinang Gazette.*

SYNTHESIS OF CAFFEINE.—At the present time, when the production and price of caffeine are in a somewhat critical state, the announcement of the synthesis of the alkaloid has a special interest, although we must say the lines upon which Professor Emil Fischer, the successor of Von Hofmann, at Berlin, and his pupil Lorenz Ach do not appear to give immediate hope of the application of the process in a commercial scale. As this is the first synthesis of caffeine, details of the methods used will be looked forward to with considerable interest.—*Chemist and Druggist.*

THE ACTION OF COCAINE.—We observe from a recent paper by Ehrlich and Einhorn that they say that Maclagan first observed in 1857 that the alkaloid from *Erythroxylon Coca* produced a sensation of numbness when placed on the tongue; thus apparently anticipating Von Anrep, who found in 1879 that cocaine has the property of a local anæsthetic. It would be interesting to know upon what grounds the authors make this statement. We have the best reason for saying that Sir Douglas Maclagan made no observations of the kind in the year given.—*Chemist and Druggist.*

PROFITS OF DOOARS TEA ESTATES.—Twenty-nine per cent per annum all round for the tea-companies of a district is probably the biggest average upon record, yet this is what Messrs. Barry & Co. record for the season of 1894 in the Dooars gardens. Analysing the results of ninety-five joint-stock tea companies registered in Calcutta, they write:—"The highest profit realised, by any individual estate, approached 62 per cent, and the Dooars district takes the lead with an average return of 29 per cent on a capital of 46½ lakhs." In Assam and Darjeeling the average profits were over 12 per cent, while in Cachar and Sylhet they approached this figure, the average for all district being nearly 15 per cent.—Local "Times," June 6.

AT WHAT AGE DOES YUCCA GLORIOSA FLOWER?—A correspondent from Peterhead, N. B., sends us a photograph of a plant of Yucca gloriosa, now in flower in that northern locality for the first time, though it has been planted forty years. It certainly produces flowers much sooner than that in the south, and although it does not flower every year, it does so very frequently, and as is natural, it always excites admiration. Neither is the production of flowers in this case to be looked on as a death warrant. Our Peterhead friends seem to have mixed up some story they have read about the Agave with the Yucca. The Agave really does die after flowering, but the Yucca—well, it is hard to kill a Yucca. Even London fogs will not do it. We saw one or two in flower on the Thames Embankment this year, and, indeed, the Yucca is an excellent town plant.—*Gardeners' Chronicle.*

PLANTING IN LOWER PERAK DISTRICT.—The coconut trees planted by the Penghulu and others are splendid, many five year old trees being full of blossom and fruit. The Indiarubber trees, too, have, done remarkably well, even on the poorest soil, but the coffee and pepper are very miserable. But several circumstances must be taken into consideration; first that the soil is very poor, secondly that much of it was poisoned by the cultivation of *nilam*, and that the Malays never could be brought to realize till too late the vital importance of keeping the land clear and the young coffee trees free from grass and weeds. They allowed grass to grow up and the coffee was permanently injured, besides which fires occurred and quantities of both pepper and coffee were burned. Further inland the soil improves and the gardens look much better. Where the coffee has been taken care of it is bearing heavily, and the fruit trees are very healthy.—Cecil Wray, Acting District Magistrate, April 19.—*Perak Government Gazette.*

PRÆDIAL PRODUCTS THEFTS COMMISSION.

Mr. James Westland as Chairman of the Northern Districts Planters' Association, and member of the Prædial Products Thefts Commission sends us copies of the questions now circulated by the Commission. Mr. Westland is most anxious to impress upon all growers of cacao and other products who have suffered from thefts, the absolute necessity of promptly answering these questions. Replies must be in the hands of the Hon. G. F. Walker by 5th July—so that it is a case of "now or never." Mr. Westland very properly remarks :—" As careful lists are kept of the names of all to whom these papers are posted, it may be taken for granted that those who do not reply, are not sufferers and have no cause for complaint."

QUESTIONS REGARDING THEFTS OF CACAO, COFFEE, GREEN TEA LEAF, CARDAMOMS, OR OTHER PRÆDIAL PRODUCTS.

1. Have you personal experience of thefts from estates under your charge? If so, from what estates, and to what extent?
2. Whom do you consider to be the thieves generally,—estate coolies, villagers, or others, resident or non-resident?
3. To whom is the produce disposed of? Do you know if there are known habitual receivers of stolen produce in your neighbourhood? If so, who are such receivers generally?
4. Can you estimate roughly what your annual loss is proportionately to your crops?
5. Do you sell any of your produce locally? And to what extent? And to whom?
6. What precautions do you take against thefts of produce? And what does this cost you annually.
7. Do you make use of watchmen, and what is your experience of their efficiency?
8. Have you instituted cases in any Police Court? If so, in what court, and with what results? If not, why have you not done so?
9. Do you consider the existing laws afford sufficient protection? If not, what alteration would you suggest?
10. Have you experience of police patrols? And if so, do you advise the introduction of such patrols throughout your district?

QUESTIONS REGARDING THEFTS OF MADE TEA.

1. Have you actual experience of thefts from factories under your charge, and on what estates? If not, do you know of such thefts elsewhere; or, on what do you base your opinion that such thieving is carried on to an appreciable extent?
2. Do you consider this is due to general pilfering on a small scale, or to occasional and more serious thefts?
3. What precautions do you take to prevent this? Have your coolies free egress and ingress at your factory? Or is any system of searching or of other preventive measures adopted?
4. Do you sell tea locally? And to what extent, and to whom?
5. Whom do you consider to be the buyers or receivers of stolen tea?
6. Do you know or suspect that there are habitual receivers in your neighbourhood?
7. What remedies do you suggest

CINNAMON.

THE SECOND QUARTERLY AUCTIONS of the year took place yesterday, when 1,063 bales Ceylon were offered, as compared with 766 bales at the February Auctions, and 1,073 bales at this period last year. The moderate supply met very good competition from the opening, and resulted in the entire quantity being disposed of at better prices, the rise in common and medium grades ranging from ½d to 1½d per lb. a similar advance being also realized for the good and fine sorts.

"FIRSTS" ranged in value from 11½d to 1s 4d for fine to superior, 10d to 11d for good, and 8½d to 9d for ordinary and medium. "Seconds" fine to superior 11½d to 1s 2d, ordinary to good 8d to 9½d. "Thirds" good to superior, 9½d to 1s 1d, ordinary to middling 7¾d to 9d. "Fourths" good to fine 7½ to 10d, and ordinary and medium 7d to 7½d per lb. "Unworked" sold at 6½d up to 8½d per lb for fourths to firsts.

Of Chips 228 bags were offered and sold at 2¼d to 2¾d per lb.

Stock of Ceylon 3,158 bales against

1894	1893		1892
2,871	3,237	and	4,042 Bales.

The next auctions will take place 26th August. London, 28th May, 1895.

TROUT-HATCHING AT HORTON PLAINS.

Mr. Drummond Deane writes :—" As regards a Hatchery at the Horton Plains I think it would be successful if the waters could be leased from the Government and the hatching and fishing run by a Club. At present, to my knowledge, many people catch trout in the vicinity of Nuwara Eliya who have never paid a subscription to the fund and some of them well able to afford to pay."

How would it do to have Mr. Tringham's whole time secured for trout operations and to inspect and control the fishing?

Mr. Drummond Deane had some very good fishing at Nuwara Eliya a few days ago, catching with a March Brown fly between 4 and 6 p.m., four trout weighing 2 lb. 12 oz., 1 lb. 2 oz., 1 lb. 4 oz. and ¾ lb. respectively. The weights were verified at the Club. The water was, of course, clear.

A DIETETIC AUTHORITY ON CEYLON TEA: ITS SALE IN FRANCE, &c.

We have received a communication from Dr. Yorke-Davies, London, author of a work on health and dietetics in which some highly complimentary references to Ceylon tea were made and which we adverted to in these columns in our review, some time ago. Dr. Yorke-Davies writes :—

"I am very much obliged to you for your kind review of my book. I am also grateful to you for pointing out to Ceylon planters that they owe a little gratitude to me, and you certainly put it very plainly to them that they might do worse than 'oil the machine.' I am quite aware from what I have heard and read that I have popularized the use of Ceylon tea, the world over. Some years ago Sir Andrew Clarke wrote letters against it in the papers and in praise of Chinese teas, and I went at him I remember, as I did not think his remarks were justified.

"I have no personal interest in Ceylon now, but for the sake of 'auld lang syne,' I have no doubt I shall from time to time have something to say about it. and there is no man in England whose opinion on dietetics has half the weight that mine has. As the work you were kind enough to review will soon be in its third Edition in England and America, its influence will be beneficial, and it is better that a British colony should be benefited by my aid than that China and its unsavory inhabitants should profit. I am quite aware that hundreds of firms in England sell Ceylon tea, but I am equally aware that many of them sell it to *retailers* who *mix* it with other teas. As it is essential for my purposes it should be *pure* Ceylon only I mention this firm for this purpose. But my advocacy of Ceylon tea benefits all equally."

Dr. Yorke-Davies also sends us an advertisement from France headed the *Association du Thé Agra Ceylan...Opinion au Docteur Yorke Davies.* (Translation), "The Agra Ceylon Tea receives at present from the public the high favour which is due to it. There is no doubt that it is better and has a more delicate bouquet than any other; and, as it contains more theine and less tannin than India and China teas, it is also more healthy. It is not injurious even to those to whom digestion is difficult."

The doctor adds: "This was sent me by a patient in France so that you will see that even there my name is used to strengthen public opinion as to the merits of Ceylon tea."

EXTENSION OF CULTIVATION.

(Extracts from Mr. H. W. Brodhurst's Report on the Kalutara District for 1894.)

There was a great demand for land during the year under review, and applications were received almost daily at the local Kachcheri. The return of lands sold in 1893 and 1894 is as follows:—

Year.	No. of Lots.	Extent. A.	R.	P.	Avr. price per acre. R.	c.
1893 ..	36 ..	99	2	1 ..	14	60
1894 ..	158 ..	1,494	3	35 ..	26	36

The returns furnished by the Mudaliyars show an increase of cultivation under the following heads:—

	Acres.		Acres.
Paddy	1,040	Cocoanuts	310
Tea	647	Other products	88
Cinnamon	107		

On the other hand, there has been a large decrease under the head "Fruit Gardens," which can only be accounted for on the ground that cocoanuts, tea. &c., are found to be more remunerative than fruit-growing.

With regard to the extent under paddy cultivation, which is estimated at 41,040 acres, as compared with 40,000 acres cultivated in 1893, the correctness of the figures cannot be guaranteed, but there can be no doubt that there has been a considerable increase. In the case of private lands by is probable that many fields which did not repad the cost of cultivation when the grain tax was levied are now being cultivated. But, on the other hand, there has also been an increase in the number of leases Crown fields at the usual rental of R2 per bushel, the figures being—

Year	No. of Lots	Extent Bushels.
1893	78 ..	219
1894	105 ..	284

This increase would seem to indicate that in the Kalutara District at any rate paddy cultivation is not altogether an unremunerative branch of agriculture.

The crops were fair, though some little damage was caused by drought. The rainfall amounted to 71·99 inches, the average of the previous five years being 88·22.

I am indebted to the Secretary of the Kalutara Planters' Association for an estimate of the amount paid to Sinhalese labourers on the tea estates. The sum expended in 1894 was approximately R300,000, an increase of about R50,000 over the figures, for 1893. The influx of this capital has done much to improve the condition of the people, especially in the Pasdun korale, and the steady extension of the tea industry is an important factor in the rapid development noticeable in the District.

THE NAHALMA TEA ESTATES COMPANY, LIMITED.

The first annual ordinary general meeting of the shareholders of this company was held yesterday, at the offices of the company, 39, Victoria Street, Westminster, S.W. The chair was occupied by Mr. Arthur W. Marshall, chairman of the board of directors.

The Secretary (Mr. John Holgate Batten) having read the notice convening the meeting, the chairman proposed, and Mr. Macbey seconded, "That the directors' report and balance sheet to December 31, 1894, be adopted." The resolution was carried.

The Chairman then proposed, and Mr. Abernethy seconded, "That a final dividend at the rate of 2 per cent on the ordinary shares of the company be paid so soon as the realisation of the produce of the company's estates permits of such payment, making, with the interim dividend of 4 per cent. paid December 13th, 1894, a distribution at the rate of 8 per cent. per annum. from April 1st to December 31st, 1894. That such dividend be paid to those shareholders whose names appear in the share register on this day, and that after this date such shares be transferable ex. such said dividend." The resolution was carried unanimously.

The Chairman next proposed "That the shareholders of the Nahalma Tea Estate Company Limited, beg to express their sincere sympathy with the family of the late Mr. H. H. Anderson in the sad loss they have sustained, and they instruct the directors to enter upon the minutes of the company their appreciation of his zeal and energy in promoting the best interests of the company." The resolution was seconded by Mr. Abernethy and carried unanimously.

Mr. Macbey proposed, and Mr. Noel Paton (by proxy) seconded, "that the directors' remuneration from the date of the formation of the company be paid to them free of income tax." The resolution was adopted.

The Chairman proposed, and Mr. Macbey seconded, "that Mr. John Abernethy be re-elected a director of the Company." The resolution was carried.

The re-election of Messrs. Fox, Sissons, and Company as auditors to the Company for the year ending December 31st 1895, at a remuneration of seven guineas, was proposed by the Chairman and seconded by Mr. Abernethy and carried unanimously.

A vote of thanks to the Chairman closed the proceedings.—*H. and C. Mail.*

PLANTING AND PRODUCE.

TEA SWEEPINGS.—In our issue of March 8 we congratulated the Indian Tea Association and the tea planting industry generally on the issue of an official Order by the Customs authorities dealing with the question of tea sweepings. We assumed that this order would be effective in putting an end, or at least mitigating, tho abuses about which there have been so many complaints. The tone of our brief note seems to have been too much for the feelings of a correspondent who contributed to a Ceylon paper a letter upon the subject of the Customs Order. The correspondent referred to not only does not think much of the Customs Order, but he rebukes us for offering any congratulations upon it, and thinks that in crediting the Indian Tea Association, which we did innocently enough, with agitating in the matter, we have done an injustice to Mr. Christy, who has taken a prominent part in directing attention to it. According to our critic we said "all is well" when "all is not well." If there is going to be further trouble over this tea sweeping business, and the correspondent, we imagine, will feel disappointed if there is not, our congratulations were, to say the least, premature. We thought that the Customs order was a step likely to prove effective in remedying the evil, until this correspondent opened our eyes. He complains of the vagueness of the Customs order, and suggests that either the owner of the teas dealt with should be able to claim the spillings of their chests, or all sweepings, whether previously placed in the "damage box" or not, should be subject to the admixture recommended to Mr. Goschen by Mr. Christy. Possibly this view is a sound one, but in the meantime it is but fair to give the Customs Order a trial, and if it prove the dead failure the correspondent predicts, something might be done towards furthering his own views.—Ibid.

SALE OF ESTATES.

Mousagala estate in the Passara District which was recently sold by Mr. C. B. Smith to the Namunukula Tea Estate Company realised £5,000. We recall the very first clearing on this fine property during our visit to Thomas Wood of Spring Valley in 1865. Mousagalla was then the property of Mr. G. S. Duff and he handed it over to his friend Mr. C. B. Smith for a very moderate price. It proved a veritable gold mine to the latter as a coffee plantation and coffee continued to do well up to a recent date. It is now however all in tea—323 acres with 25 acres reserve.

We also learn that Florence and Tunisgalla Estates in the Knuckles District have been pur-

chased by Messrs. A. H. Pargiter and J. H. Brown for £6,250. They comprise some 300 acres in tea, 30 acres cardamoms and 200 acres uncultivated or reserve.

CEYLON TEA TRUST COMPANY.

(From our Correspondent.)

June 14.

A very big Company is just being advertised that has a Ceylon connection. It is called the Ceylon Tea Trust, and has been incorporated with a capital of £60,000 for the purpose of developing tea estates in Ceylon. Enclosed you will receive copy of the lengthy advertisement made by this new Company in the London *Times*. You will observe that the only estate mentioned is that of Oolapane. This is not a very extensive estate apparently, and the project advertised, we presume, is intended to cover the acquisition of other properties, though none of these are mentioned. The scheme appears to be fathered by a body calling itself the Nugget Exploring Company, though what this may be, or what possible connection it can have with the tea enterprise, I neither know nor can surmise. The title chosen of the Ceylon Tea Trust may intimate a very wide range of business:—

The subscription List will Open this Day (Monday), 10th June, 1895, and Close at 4 p.m. for both town and country on Wednesday, 12th June, 1895.

The Nugget Exploring Company (Limited), through their Bankers, invite subscriptions for 60,000 shares at par.

The Ceylon Tea Trust (Limited), Incorporated under the Companies Acts 1862 to 1890, whereby the liability of the shareholders is limited to the amount of their shares. Share capital £60,000, divided into 120,000 shares of 10s each. Issue of 60,000 shares, payable 2s on application, 3s on allotment, and balance, 2s 6d on 1st July, 1895, and 2s 6d on 1st September, 1895.

Directors.

H. W. Pritchett, Esq., 1, Winchester-avenue, Monkwell-street, E.C.

F. C. G. Bitso, Esq., 3, Bernard-street, Russell-square, W.C.

E. C. Bredin, Esq., 58, Stratford-road, West Kensington.

A. H. Baily, Esq., 32, Goldhurst-terrace east, South Hampstead.

This Company is formed to acquire, cultivate, and develop Tea Estates in Ceylon, an industry which of recent years has yielded satisfactory returns on capital invested.

The following quotations for Ceylon Tea Companies' Shares are taken from the Ceylon Observer of 3rd April, 1895.

From Messrs. Gow, Wilson, and Stanton's List of May, 1895.

Acreage.—This Estate, consisting of 164½ acres situated in the heart of the tea-producing portion of the Island of Ceylon, has already been profitably worked by the present owner, having 100 acres in full bearing, with the remainder just commencing to bear.

Besides this, 400 acres highly suitable for tea growing, adjoining the Oolapane Estate, can be secured by this Company, which increased area, when properly cultivated and in full bearing, should enormously enhance the profits now being earned.

Situation.—The estate is situated at an elevation of 1,800 feet in close proximity to the celebrated Mariawattee Estate, whose average yield from the earliest planted fields has for years past been nearly 1,000lb. per acre per annum.

Transport.—The facilities for transport on this estate are exceptionally favourable, as, in addition to the Ceylon Government Railway passing through it (a station being actually on the property), it is intersected by good cart roads.

Water Supply.—The estate being bounded by the Mahawela Ganga (the principal river of Ceylon), there is an unfailing supply for working a tea factory.

Yield.—Despite the small portion of the estate in full bearing, last year's crop amounted to about 60,000 lb. while, judging from the yield of the oldest planted tea the capacity per 10 acres of cultivated land should yield at no distant period about 100,000lb, of tea per annum, this year's crop being estimated at 80,000lb.

It is proposed to erect a large factory, which on the present output of this estate should effect a considerable economy; in addition to which a large profit may be derived from the purchase of native tea from adjoining estates to be manufactured and sold by this Company.

THE INDO-CEYLON RAILWAY: THE VIEWS OF MR. SHADBOLT: COLOMBO TO BE THE "LONDON" OF ASIA."

We are pleased to be able to lay before our readers, the following very clear conclusive letter addressed to us by Mr. Shadbolt, Chief Engineer on the Madura-Paumben Survey, whose Report on this and on the crossing to Ceylon we reviewed the other day. It will be observed that Mr. Shadbolt is convinced the line must be on the metre-gauge and run direct to Colombo traversing Adam's Reef by means of a solid breakwater rather than by screwpile bridges as proposed by Mr Waring. This is very important; for, we believe the Indian Engineer must have consulted the Marine Surveys and based his Report on the information therein contained. A breakwater, we need scarcely say, depends chiefly on local labour and material and every year should see it grow more stable, requiring nothing in upkeep if the surmise be correct as to the reef rising and being added to steadily. Here is Mr. Shadbolt's letter:—

To the Editor, "Ceylon Observer"

Coonoor, 25th June, 1895.

DEAR SIR,—I have to thank you for copies of the *Ceylon Observer* of 8th and 18th June. I see in the latter a reference to my Report, so I suppose you have seen it. It has apparently been placed at the disposal of the Press on this side, so there is no impropriety in my now sending you a copy.

So far as you have referred to the matter, your views on the subject appear to be in sympathy with my own. The following seem to me the most important points:—

(1.) The line must be on the metre-gauge: The whole of Southern India is occupied by this gauge.

(2.) The line must run direct to Colombo and not be hampered and depreciated by trying to work it in with existing lines.

(3.) With regard to Adam's Bridge the shoals have a tendency to increase and become more stable and a form of construction should be adopted which would encourage this. See "Report" for views on the water currents.

These are three points in which I fancy I differ essentially from Mr. Waring.

The following are matters of speculation rather than observation:—

(4.) I believe the natural position of Colombo ensures it a future of immense importance. Its situation will make it for Asia what London is to Europe.

(5.) The political value of the railway would be enormous with regard to the Far East in allowing the military resources of India to be concentrated at such a commanding point.

(6.) The fear of Ceylon being merged in India is absolutely puerile and rests on nothing. The idea of Madras annexing anything is almost unthinkable.

I am merely sending these remarks as you appear to be warmly interested in the matter.—Yours faithfully, E. I. SHADBOLT.

We need scarcely say that we are greatly obliged to Mr. Shadbolt for expressing so strong an opinion as to the future of Colombo and on the political value of the Railway to the Imperial and Indian Governments. No less to the point is his rebuff to those who would raise the bogey of Annexation at this time in order to block the path of an Indo-Ceylon Railway. We feel sure that Mr. Shadbolt's letter putting so many points with such admirable clearness, will have a good effect both in Ceylon and in England, in removing obstacles in the way of commencing an undertaking which on local, Indian and Imperial grounds is so desirable and potential for good.

THE OUTLOOK FOR CAMPHOR.

An American journal—the New York *Drug Report r*,- interested from the wholesale and retail point of view?—thinks there is no need now to fear a scarcity:—

The speculation, which is now the feature of the crude camphor market in London, is of considerable interest to the refiners of this very important drug. Ever since the war commenced between China and Japan there has been more or less speculation in crude camphor, and the price of the refined has been advanced several times since last summer, but at times the price has weakened, owing to lack of support from consumers and temporary withdrawal of speculators in the crude. The latest advances in the refined which our market reports have chronicled, were caused by another speculative manipulation in London of the crude, and it is reported that a well-known financier is at the back of the movement. The price has recently been advanced from one hundred and twelve shillings to one hundred and fifty shillings, c. i. f., and very heavy purchases have been made by those engaged in manipulating the market. The speculation is doubtless based on the condition of affairs at the sources of supply. Judging from all the information that has been received, the conditions do not appear to warrant any movement of the character of the present one. While it is true that for several years the output of Japan and Formosa amounted to 60,000 piculs, of one hundred and thirty-three pounds each, and while it is also true that the production of Japan has been steadly declining, with the prospect of the camphor forests of that country soon becoming extinct, the fact must not be overlooked that Formosa has enormously increased her output, which had been greatly curtailed by the action of the Chinese authorities in heavily taxing the gum. Concessions granted by the Chinese to a syndicate some three years ago did away with the vexatious restrictions upon this important industry, with the result that the production is greater than it ever was, and now exceeds that of Japan. The production of both varieties in 1893 was, in round numbers, 56,000 piculs, and in 1894, 55,000 piculs, almost up to the output of some years ago. The supply has proved more than ample for all requirements of the trade, notwithstanding the large increase in certain directions in the demand for the refined article, as naphthaline has to a considerable extent taken its place as a moth destroyer. Quite a larger supply of crude has been carried in Hongkong, and at no time has there been any prospect of a scarcity.

A CAMPHOR FAMINE.

The news that the price of camphor was advancing at the rate of a penny or two per pound every day, as the result of the recent war between China and Japan, and that England and the Continent were threatened with something like a camphor famine, has caused considerable alarm. That this should be so is not surprising, seeing that camphor is an article of daily consumption, used as a medicine in diseases from the most fatal form of Asiatic cholera to a mere cold in the head. Its value as a disinfectant is thoroughly established. Beyond this, its use has helped to check the spread of Asiatic cholera. It has been tried in Naples by the famous Dr. Rubini, whose testimony to the merits of camphor as a cure of cholera has never been disputed. In the great cholera epidemic of 1854, he administered camphor, taken internally, to 400 cholera patients, every one of whom recovered. Proctor, during the cholera epidemic in Liverpool in 1866, treated 123 cholera patients with camphor, and there were but three cases of relapse. The drug has indeed even more beneficent properties than the general public are aware of. A large dealer in the drug says the present unprecedented demand for it is due to the fact that more camphor has been sold for future delivery than is at the moment obtainable, and that the stock on hand does not exceed four or five thousand hundredweight.

The greater portion of our camphor comes from China and Japan. Before the war it was cheap, but as soon as hostilities were begun the price went up. With the close of the war the manufacturers thought camphor had reached its top price and must recede, so they did not increase their stocks. But it turned out that they were wrong, and those who delayed buying had to pay a higher figure for camphor, the price of which, like that of everything else, is regulated by the relation of demand to supply. Camphor costs today from £7 to £8 per case of a hundredweight; but a few years ago the price touched £9, and at a former period even reached £20. There is no reason why the price should not advance beyond the very moderate figure it stands at now, which is not excessive compared with what it was in former years. Camphor is dearer in China today than in London, a case that costs £7 16s here being sold in China for £9.

It would appear, therefore, that there is less camphor in England today than is necessary to meet the requirements of the manufacturers; and when the Continental buyers begin to purchase heavily, it is more than likely that camphor many fetch £12 or perhaps even £14 a case. A good deal of camphor is held by a syndicate, who, however, will, it is understood, sell to manufacturers at a moderate price sufficient camphor to carry on their business. But speculators who have sold camphor they did not have, and could not now obtain, will suffer. Should a warm summer bring dysentery or cholera to England, the demand for the drug will be very great. Camphor has been nearly all obtained by the Chinese, who are greatly demoralized by the results of the war, or by the Japanese, whose Government have restricted the production by passing a law that the camphor-trees shall not be cut down but only tapped. It will take the Chinese seven or eight months to prepare the new crop of camphor for the market, camphor-making from the gum being a very tedious process. The gum has to be washed and spread in the sun to dry, and undergo other treatment. Camphor-making is not a regularly organized industry, but a monopoly of certain tribes in China, some of whom are now in rebellion against the Government.—*St. James's Budget*, May 31st.

OUVAH COFFEE COMPANY, LIMITED.

Report to be presented to the Thirty-second Ordinary General Meeting of the Company, to be held at No. 5, Dowgate Hill, London, on Wednesday, the 19th day of June, 1895, at 12-30 o'clock p.m.

The following annual accounts are now presented to shareholders viz.:—Profit and Loss Account for Crop 1893-4, Balance Sheet made up to 31st March, 1895.

CROP 1893-4.

In the Directors' last report the coffee crop of the above season was estimated at about 600 cwts., and it will be seen that the actual weight sold in London amounted to 556 cwt. 2 qrs. 6 lb.

The proceeds amounted to £2,774 9s 2d, giving an average of 99s 8d per cwt., against an average of 99s 2d obtained for the previous crop. Coffee sold in Ceylon realised £119 7s 11d.

The crop of tea was estimated at 540,000 lb. and the actual weight sold from the Company's own estates was 555,650 lb. Besides this, 446,147 lb. of tea manufactured from leaf bought from neighbouring estates were sold.

The value of all tea sold was £36,185 2s 4d, or an average of 8·66d per lb. as compared with 10d for the previous season.

Cocoa, weighing 57 cwt. 0 qrs. 21 lb. realised £172 12s 4d, the average selling price being 60s 4d per cwt., against 71s 4d for the former year's crop.

It will thus be seen that the total value of all produce sold amounted to £39,251 11s 9d.

The total expenditure for the year in Ceylon and London, amounted to £31,499 16s 1d, and deducting this from the value of the produce, a profit is shewn on the season's working of £7,751 15s 8d. To this has to be added the sum of £331 5s 3d, brought forward from last year, giving a total of £8,083 0s 11d at the credit of profit and loss account.

An Interim dividend of 2½ per cent. on the capital of the Company was paid on the 10th January last, which absorbed £2,500 of the above-named sum, and the Directors now recommend that £3,500 be applied to the payment of a further dividend of 3½ per cent., making 6 per cent. for the year, and that the balance of £2,083 0s 11d be dealt with as follows:—

To be written off Cost of Ledgerwatte..	£1,000 0 0
To be credited towards Cost of Badulla Tea Factory......................	1,000 0 0
To be carried forward to next Account..	83 0 11
	£2,083 0 11

The coffee crop was less than half that of the previous season, the crop of 556 cwt. being secured from an area of 765 acres, or at the rate of about three-fourths of a cwt. per acre. The proceeds of the coffee crop were £2,893 17s 1d as against £6,876 7s 7d for the previous year, shewing a falling off of £3,982 10s 6d.

Tho crop of 555,650 lb. of tea was obtained from an area of say 1,310 acres, being equal to an average yield of 424 lb. per acre, but this area include 254 acres of young tea from which only small pluckings were obtained.

Shareholders will see from the above that the returns from tea are well up to expectations, and that the shrinkage in revenue as compared with last year is entirely due to the short coffee crop.

Cinchona bark weighing 19,607 lb. has been shipped to London on account of crop 1893-4, but not yet realised. Owing to the low prices ruling for bark the proceeds will be very small, and they will be credited to crop 1894-5.

CROP 1894-5.

The promise for this season is good and it is hoped that the following crops will be secured:—

Coffee	1,000 cwt.
Tea	575,000 lb.

If prices remain at or about their present level the year's working should therefore result in a highly satisfactory profit.

The factory at Badulla, referred to in last report, was opened for the manufacture of tea in January last, and since then has been working continuously and giving entire satisfaction.

During the past year 150 acres have been planted up in tea, and it is proposed to plant up a further 150 acres in the autumn of the current year.

The area now under tea is as follows:—

T E A.

Over 5 years old ..	1,017	acres.
Planted November-December 1890	283	,,
Do .. 1891	109	,,
Do .. 1892	45	,,
Do .. 1893	115	,,
Do .. 1894	150	,,
Total area under tea ..	1,719	acres.
Total area under coffee..	669	,,

INDIAN AND CEYLON TEA.

ANNUAL REVIEW.

38, Mincing Lane, 11th June, 1895.

The close of another year, marked by the issue of the statistics for the twelve months ending 31st May, finds the position of the two main branches of the Tea Trade attracting general attention; and not without reason, in view of the vast commercial interests involved.

In contrast with the discouragement that some have had to face in other departments of the Empire's commerce, producers of Indian and Ceylon tea have the satisfactions of being identified with a stable and promising Industry—liable, it is true, to fluctuations affecting the degree of its prosperity, but built upon the secure foundation of administrative experience, and freed as far as any industrial undertaking can be from dependence upon the chances of a merely speculative enterprise.

The result of the year's work has been exceptionally good. To some extent, circumstances have contributed to make it so: an increase of only moderate dimensions in the production; sustained demand at home; growing demand from other markets; low rates of exchange and freight—have told in favour of producers. But behind these several factors of success stands the evidence that those on whom the burden of responsibility primarily rests—the managers and those who direct and assist them—have shown their capacity to maintain the general excellence of their produce; often to increase the productiveness of their gardens; and to do so without excessive expenditure.

The outcome has been to widen the margin between cost and proceeds to the point which enhances the value of plantations for the time being, and enables provisions to be made for contingencies of the future.

How far these contingencies may affect us in years to come it is difficult to forecast; but it would seem mainly to depend upon—

1. Whether increase in production be gradual or excessive in any one year.
2. The point to which the total supply eventually expands.
3. The result of the efforts made to induce consumers abroad to use our tea.

Higher rates of exhange or freight; difficulty in obtaining labour, have, of course, to be regarded as possibilities; but they may be counterbalanced by economies resulting from amalgamation of small estates with larger ones; by abandonment of outlying or inferior plots difficult to cultivate profitably; and by gradual increase in the productiveness of the plant itself arising from high-cultivation, of which some are now reaping the fruit.

Should the conditions hereafter be less favourable than they are today, the wisdom of the policy that has made extensions, roads, and bridges; given a complete equipment of buildings and machinery; and created reserve funds—out of revenue—will be emphasized.

These are matters of deeper concern than market movements, variations of climate, the relative success of one locality as compared with another, or the temporary transference of demand from one class of tea to another—important as these are to individual interests. The stability of the industry, as a whole, rests upon a wider basis: and its position will be appraised and its prospects ganged by the record of results achieved during a series of years, adverse as well as prosperous. This record entitles Managers to look back on the past with satisfaction, and justifies proprietors in regarding the future with reasonable confidence.

Among the features that have marked the season now closed, two stand prominent, viz., that the United Kingdom has taken a larger quantity of British-grown tea than ever before; and, that a higher price has been obtained for it than for the previous crop. But we are approaching the limit of consuming power at home; there only remains a margin of 11 per cent. to be gained; and we cannot expect the other kinds in use to be entirely displaced.

The need of opening up fresh markets consequently becomes pressing. Outside the United Kingdom such markets exist; they are capable of taking far more than the surplus production of India and Ceylon, and they must be won—for the result will be worth the trouble and expense of gaining entrance to them. Looking merely to statistics, the progress made in this direction may seem slow; but the fact is that during the past season prices have not admitted of its being more rapid. The development will be seen when there is plenty to spare from the home market, and quotations for the lower qualities are not maintained here at a level which checks Colonial and foreign trade. That consumers abroad do not yet appreciate our finer qualities, and as a rule only take the cheaper sorts, is a matter of regret. In time they may do so; but it is well to take note of facts—and those who are prepared to spend money on an enterprise of a somewhat missionary character in other countries will best do so in helping to create and foster the sort of business most likely to follow through the ordinary channels of trade.

Seeing that since 1887 we have lost ten million lb. of the annual re-exporting trade of the United Kingdom, the gain since then of 5 or 6 millions in the quantity of British-grown tea that we yearly send abroad is the more significant.

Another feature of the year is the reduction of the margin between quotations for the commonest and good medium grades. This need not be taken to indicate any indifference on the part of consumers to the quality of the tea they buy; the prices paid for the finest descriptions negative such an idea—it is the natural result of receiving a large percentage of good tea. The Assam crop as a whole has been especially good: Darjeeling has sent much high-class tea; while other districts and Ceylon have either maintained or gained ground in respect of quality. The net result has been a crop of high average merit, containing a smaller percentage of common tea than the previous one—which has *raised the average value*, while to some extent *contracting the range* of quotations.

This has proved of more advantage to some districts than to others—but to regard it as a reason for relaxing efforts to make fine tea, and for merely aiming at a heavy yield, would be unwise: although upon this point we would not lay down a rule for general application. For while experience teaches that a heavy crop of low average quality leads to general depreciation of values for all but the very best tea—it also shows that some estates cannot trust to the chances of a short crop, inasmuch as their plant does not enable them to reach the market's standard of fine tea.

A wide variety in character, in order to meet the varied tastes of consumers in different parts of the Kingdom, is necessary; and we repeat our suggestions to Managers to keep to a type of tea distinctive of their estate; if they have not found the one most suitable to their soil and plant, to make experiments until they succeed; and not to change it in order to make some other kind said to be in demand. Other points to aim at are—

1. Such regularity as may be possible all through in grading and liquor, so that when buyers see the mark for sale they may have some assurance of finding what they have waited for.

2. Avoidance of breaking the leaf, or of needless subdivision into various grades; which will help to raise the size of breaks—a matter of increasing importance as shipments become larger.

3. Bringing produce to market at regular intervals from the beginning to the end of the season.

The policy outlined has been followed with good results by many of the largest producers. It fits in with the modern principles on which the Home Trade work; viz., of buying regularly through the nine busy months of the year, and of keeping to a growth found suitable to their particular business.

By attention to the points we have named sellers gain their special outlets and keep them.

We would especially bring these matters under the notice of our friends in Ceylon, asking them to avoid shipping so many separate invoices at short intervals; and to do their utmost to prevent their teas from losing their individuality. In some cases this has occurred, and it is a risk which Ceylon—whose prospect as a tea-producing country are most promising—must guard against: for it tends to bring down prices to a dead level; and may possibly account for the average value of Ceylon tea having fallen more than that of Indian during the past four or five years.

There are other matters of detail conducive to the profitable working of Estates, but they are of minor importance, and we leave them for direct reference to advisers in London as occasion arises.

There remains a subject of general interest, viz., the effect of the war in the East upon the production and export of China tea. As regards the home trade, there should not be cause for apprehension, for the low point to which our cost of production has fallen makes it unlikely that China Congou sufficiently good can be laid down here cheap enough to undersell our teas and so displace them to any considerable extent.

We will therefore conclude by calling attention to the statistics below; and to the statement of results realised by most of those who sell in London, which by the courtesy of our friends we are permitted to publish.

They justify a hopeful view of the future of the Industry if it is worked on the business-like lines that have hitherto been followed, and the efforts to extend it still further are tempered with caution.

The following figures show the proportions used at Home and Exported:

Of duty payments for the twelve months ending May 31st—

	1895	1894	1893	1892
Proportion of				
Indian	52·50 %	54·50 %	51·51 %	50·80 %
Ceylon	33·50 ,,	32·00 ,,	30·52 ,,	28·15 ,,
China and Java	14·00 ,,	13·50 ,,	17·97 ,,	21·05 ,,
	100	100	100	100

Of Exports from the United Kingdom for the twelve months ending May 31st—

	1895	1894	1893	1892
Proportion of				
Indian	12·50 %	10·30 %	9·10 %	11·30 %
Ceylon	18·50 ,,	13·30 ,,	10·32 ,,	8·20 ,,
China and Java	69·00 ,,	76·40 ,,	80·28 ,,	80·50 ,,
	100	100	100	100

The progress of the Ceylon trade is shown by the following statistics:—

Year ending 31st May		Imported lb.	Sold in Auction Pkgs.	Avr. price ₱ lb.
1895	..	74 million	870,000	8¾d
1894	..	72½ ,,	850,000	8½d
1892	..	64 ,,	790,000	9¼d
1890	..	34 ,,	450,000	11d

Indian Crops—Results of some of the crops sold in London, Season 1894-5.

Districts:—Assam, Assam and Cachar, Cachar Sylhet, Darjeeling and Terai, and Dooars Chittagong.

Totals:—Acreage-yielding 97,120, Crop 42,284,000 lb., Per acre 435 lb., and Average price 1894-95 10·55d.

Returns for	Acreag	Quantity. lb.	Per Acre.	Price per lb
1893-94	91,300	40,083,000	439	9·65
1892-93	85,780	34,900,000	406	11·30
1891-92	78,500	34,640,000	441	10·17
1390-91	71,600	29,600,000	413	11·75

Wm. Jas. & Hy. Thompson, Brokers.

Tea: Messrs. W. J. & H. Thompson's Annual Tea Report is always good reading. We give it in full above, with such statistics as are of interest. It is satisfactory to find that the leading Mincing Lane Brokers take so hopeful a view of the stability of the enterprise, while they afford some admirable advice to the planter. We commend the Report to the careful attention of our readers.

DRUG REPORT.

(From *Chemist and Druggist.*)

London, June 6.

QUININE—The last business reported before the holidays was at the rate of 12¾d per oz for B and S or Brunswick quinine on the spot, and at 13¼d per oz for ditto, October delivery; the London stock has again been considerably reduced in the course of the last month, the warehouse figures being:—

	oz.
Imports in May	24,292
Deliveries in May	139,784
Stock on May 30	2,332,164

No business is reported this week, and 12¾d per oz remains the general spot quotation.

CAFFEINE—Very scarce on the spot; business has been done this week in small quantities, at 27s per lb on the spot, and we hear that one of the makers has sold at 21s per lb for August-September delivery. On the other hand, another manufacturer is said to be willing to accept 19s per lb for delivery not before end of July.

CINCHONA—The exports of cinchona from Ceylon during the periods from January 1st to May 6th have been—

1895	1894	1893	1892
lb	lb	lb	lb
276,220	827,879	1,723,379	2,136,843

COCOA-BUTTER—On June 4th about 70 tons of Van Houten's cocoa butter were sold by auction in Amsterdam at an average price of 64 73c per half-kilo, the lowest price realised by any lot being 64¼c, the highest 65½c. The tone at the auctions was quiet.

COCAINE—The reduction in the convention-price announced last week was followed on June 1st by another, and still more drastic, move on the part of the combined makers, the price then being reduced by 1s 6d per oz at the time—viz from 16s to 14s 6d per oz for lots of at least 100 oz, and from 16s 6d to 15s per oz for smaller quantities. The cause of these continued reductions is thought to be the determination of the combined makers to crush out an outsider in Southern Germany, who has just started cocaine-making. It was thought that the last shot would have silenced this intruder; but the contrary was the case, the "outsider" replying to the challenge by a further reduction in his quotation to 14s for 100-oz lots which still leaves him six-pence below the convention-price. The end of the fight will probably be the inclusion of the outsider in the syndicate, followed by a general advance in the quotations. From another quarter we hear that the object of the cocaine refiners in reducing their quotations is not, as is generally supposed, that referred to above, but that their intention is simply to secure cheaply certain parcels of raw cocaine which have just arrived.

THE AGAVE OR ALOE FIBRE.

TO THE EDITOR, "THE INDIAN & EASTERN ENGINEER."

SIR,—Some months back a letter appeared in the columns of your paper, asking for information as to the methods of preparation of the so-called Aloe Fibre.

A brochure, entitled "All about Aloe and Ramie Fibres," was published in 1890, at the press of the *Ceylon Observer*, by Messrs. A. M. and J. Ferguson, one of the many contributions of that firm to the literature of Tropical Agriculture, embodying a translation of a pamphlet published in 1882, from the pen of M. Evenor de Chazal, of Mauritius. The translation does not, however, include the diagrams of the somewhat crude machinery then employed in the extraction.

On the estate in Ceylon where the present writer is employed, the ropes used for suspending the sacks of tea to the runners on the wire shoot, are made on the estate, from aloe fibre, prepared without any mechanical appliances whatever.

The coolie takes a leaf, cuts off the ends square, and hooks one end on to a nail projecting from a board. The leaf previously beaten with a stone is scraped with a half coconut shell, till the fibres at one end are loosened. These are then tied in a free knot, and hooked on to the nail (the leaf being reversed), allowing the fibres to be set free at the other end.

The fibres are next hung up to dry, twisted into a yarn, which is wound on to spools, which yarn the operator twists into a 3-ply rope, his toes being used as fingers to hold the yarn during twisting.

Notwithstanding the extremely barbarous *modu operandi*, the ropes are cheaply made and stand their work very well.

Having in view that the aloe plant requires no cultivation whatever, it would seem to suggest the possibility of remunerative enterprise in this island.—Yours, &c.,

J. S S.

Ceylon, June 4, 1895.
—*Indian Engineer.*

PLANTING AND PRODUCE.

THE CEYLON ASSOCIATION IN LONDON.—The annual meeting of this Association is a matter of more than ordinary interest. The work performed by the Association is thoroughly practical, and there is such evidence of life and vigour about its whole proceedings that the year's record is well worth careful attention. The Ceylon Association, whether it undertakes work great or small, always means business. It is, therefore, very gratifying to find that the movement for joint action between India and Ceylon in advertising British-grown tea in the United States was one of the chief items of the Association's programme at its meeting. We do not wish to under-estimate the difficulties attending a completely harmonious union of forces in this matter. That the basis for a workable arrangement should have been arrived at reflects credit on the diplomacy of those concerned in bringing it about. The force of circumstances has out-weighed minor considerations, and in view of the absolute necessity for finding new and important markets it has been decided to endeavour to sink small differences and avoid friction. It augurs well for the future prospects of the joint scheme that it has received the approval of the Ceylon Association in London.

PRODUCE AND THE BOARD OF TRADE RETURNS.—The Board of Trade Returns for May are fairly satisfactory. As regards produce, the clearances for home consumption of tea, coffee, and cocoa show increases, tea in particular. The quantity of tea is 23,816,000, compared with 18,169,000 lb.—an increase of 5,647,000 lb. Of this increase 2,000,000 are due each to India and Ceylon, and 1,000,000 lb. to China.

THE AVERAGE PRICES OF PRODUCE.—A new issue has just been made by Mr. Effingham Wilson of Mr. Augustus Sauerbeck's chart of the average prices of general commodities in England. The figures again demonstrate that the period of decline is not yet at an end, or was not so in 1894. Mr. Sauerbeck takes forty-five representative, or principal, commodities, and compares their prices with the average of the ten years 1867-77, which is adopted as "100." As they rise or fall against those prices, the index number goes above or below this 100, and since 1873 the course of prices has been almost uninterruptedly downward. From 1888 to 1891 the average was about 70, or 30 per cent. below the standard of 100; and in 1894 it was under 64, or 36 per cent. below. Taking particular articles in illustration, the average price of tea was 11¼d. per lb. in the ten years adopted for standard of comparison. That price, in other words, together with the "average important price," was 100 in the index number. In 1894 tea fell to 4½d per lb. which brings the number to 47, or a fall of 53 per cent. In no instance, except that of coffee, which has risen 17 per cent, is the price now higher than it was five-and-twenty years ago.

NUGGETS AND TEA.—A prospectus has been issued this week of a company called the Ceylon Tea Trust, Limited. The share capital of the concern is £60,000 in shares of 10s, and the object as stated in the prospectus is "to acquire, cultivate and develop tea estates in Ceylon." There are numerous extracts in the prospectus from various newspapers in praise of Ceylon tea, but the main fact of importance which we gather from the prospectus about the Ceylon Tea Trust is that the directors "have in view the purchase of several well-known estates, and have already practically arranged to acquire, on terms most favourable to the shareholders of this company, the Oolapane Estate. Upon the board of a tea trust it is natural to look for the names of men

well-known as representatives of the Ceylon tea industry. Subscriptions to this project are invited by the Nugget Exploring Company, Limited, while the directors of the Trust are H. W. Pritchett, 1, Winchester Avenue, Monkwell Street, E.C.; F. C. G. Ritso, 3, Bernard Street, Russell Square, W.C.; E. C. Bredin, 58, Stratford Road, West Kensington; and A. H. Baily, 32, Goldhurst Terrace East, South Hampstead. These gentlemen may be acquainted with all that concerns tea planting, but their names are not familiar to us in that connection. If they understand tea planting they are unnecessarily modest in failing to mention the fact. Investors, although they are prepared to ignore details at times, are apt, when in more thoughtful mood to attach great importance to information of this kind.—*H. and C. Mail*, June 14.

NEW AREAS OF CULTIVATION IN KEGALLA.

The extent of land, exclusive of chena, which was newly brought under cultivation during the year, is computed in round numbers to be 2,500 acres; and the area of the various products is estimated approximately in the following proportions:—

Tea	1,250
Coconuts	1,000
Fruit gardens	150
Cacao	100
Total ..	2,500

The extension of coconut planting is noticeable, but the other denominations require no comment. Paddy cultivation does not perceptibly increase, for the very good reason that there is hardly any more land which is capable of being asweddumized.—*Mr. F. H. Price's Administration Report for 1894.*.

CEYLON TEA IN THE UNITED STATES OF AMERICA.

(*To the Editor "Tropical Agriculturist."*)

Sir,—At the request of the Chairman, I enclose the accompanying letter from himself and the connected papers for publication in the newspapers for general information.—I am, &c.,

A. PHILIP,
Secretary.

Kandy, July 2nd, 1895.

(*Copy of Letter.*)

Sir,—A wish has often been expressed that more could be published about our representative's actions in America and London with a view to pushing Ceylon tea in foreign lands—a wish with which I sympathise fully. But it must be remembered that Mr. Mackenzie's relations with the Committee must necessarily be confidential, as his duty is to advise the Committee; and in doing so he is bound to mention names and occasionally some disagreeable facts and incidents, which it would be quite impossible to publish.

I enclose, for publication, some extracts from a letter recently received, with names in most cases omitted.—I am, &c., A. Melville White.

Madulkelle, July 1st, 1895.

Extracts and precis of Mr. Wm. Mackenzie's letters to the XXX Committee, June 2nd to 7th, 1895.

Mr. Mackenzie writes:-

I have had a long interview with Mr. ——— who appears to be the agent in Chicago for ——— of Colombo. He says he took up Ceylon tea after the close of the Chicago Exposition. He says:—"In 1894 I sold 5,000lb. pure Ceylon of which I imported 3,000 lb. Since the beginning of 1895 my importations to hand and on the way amount to 17,000lb. and before the close of the year will be 50,000lb." He condemns giving quantities of samples and says Indian teas are being sold as Ceylons. He says dealers have the call for Ceylon tea, but India has the market.

Of course the condemnation of samples and trade, against India have been caused by the circulation of a quantity of your samples by the Iowa Company and the Sylhet Company's agent in Chicago. We must be prepared for such complaints of rival agents. I have thanked him, have pointed out that the Bounty system is not approved of and that India gives no bounty, yet its teas are selling freely; have added, 'I shall be glad to hear from you how we can specially assist you by some other means than a bounty.' I have assured him Ceylon teas are beating Indians in all countries outside Britain, and am to send him Gow, Wilson & Stanton's diagrams."

Mr. Mackenzie goes on to say he is in correspon- with a strong firm in New York who are compiling a very stylish book on Ceylon teas which they are to distribute to educate Americans. This firm writes:—"We are prepared to take hold energetically and can guarantee you large results. We are willing to spend our own money, but should like you, who are alike to reap the benefits of our advertisements, to share in the expenditure."

Mr. Mackenzie says they wish to import direct on through bill of lading, and to have their packages leave Ceylon with their own marks and brands.

Mr. Mackenzie further writes:—"I have not yet met Mr. Rogivue, but I have had an interview with one of the principals of his financial agents. That gentleman speaks enthusiastically of past results and future prospects, but was not in a position to give me definite figures, which I am promised when I meet Mr. Rogivue himself. The difficulty with the Russian tea business is the enormous amount of ready capital it requires. The duty is 1s 10½d per lb and has to be paid *in full* on each shipment before any of the tea can be removed. . . . It is very gratifying to know that Ceylon teas sent to Russia have increased from 500,000 lb in 1890 to 2,100,000 lb. in 1894. I had a long and very interesting interview with Mr. Densham of Mazawattee fame. He has so far been disappointed with the result of his advertising and pushing in America. The same expenditure would have increased his business to a greater extent here than it has done in America, and *mark this, when, in the future, results from our efforts may be disappointing*, he thinks our fund and that of India combined, is a fleabite; just about a fourth of what his firm think well to spend in Britain and Ireland. He says Ceylons are his main teas, his high priced teas being pure Ceylon. . . . . I find it generally believed here that we must make a market for Indian tea in view of the expected increase of shipments from there. Other countries take Ceylon in preference—see Indian decrease and Ceylon increase to Australia. Here in Britain Indians are taken more readily, and to prevent a glut in London we must find markets for our teas which are preferred abroad. . . . As I have had the "wire" intimating that I might spend the £1,000, I have sent £100 to Chicago and have the written assurance that this sum will be covered by a similar amount, and I hope to get it covered twice perhaps three times. . . . . I am also arranging for some more advertising in Commercial journals and in the Canadian *Grocer* papers which reach the trade rather than the consumer. To touch the latter is a very expensive undertaking and cannot be begun *till I know you have plenty of funds in hand*. . . . If we can interest a few strong people, and the enquiries I am making prove that interest is being roused, and these few make a business; other dealers must handle article in self-defence. . . . . I have now seen a wire from Chicago to the effect that the £100 I gave the Co. for their agency there has been covered by a large distributing house. Messrs. ——— also covered it.

"I met Mr. Rogivue at the office of his agents here two days ago. He is confident his work in Russia has materially helped to bring about the rapid increase in the consumption of Ceylons there during the last four years. His own business is increasing by leaps and bounds. His figures for 1893 were double those of 1892; and 1894 was nearly 70 per cent a head of 1893. His success has stimulated many Russian dealers to take up our tea. Russia is such an important field that I think the Committee might

well devote £—— per annum to helping Mr. Rogivue's work. I saw the standards kept at the office of ——— & Co. for their guidance in buying teas for Russia. They are similar to those which are required for America—whole leaf long wiry twist and well free of brokens and dust. Neither Russia nor America care for Broken Pekoes, but will take eagerly long wiry well twisted Broken Pekoes. . . . . . I was asked at Lipton's why Ceylon now shipped so large a proportion of broken teas. The market does not want them, as is proved by the fact that high grown B. P.'s are selling down to the price of Pekoes and good Souchongs." ———

39, Artheuhall Gardens, Hampstead, June 14th 1895.

The Secretary Thirty Committee Kandy.

SIR,—I have to acknowledge receipt of yours of 15th ultimo.

I enclose some letters I have had from America. You will note proposed Canadian Exhibition is defunct. It was the idea of *promoters* interested in *pickings*.

I have replied to ——— that he shall induce his principals in Colombo to go into the tea business when we could assist him, with others, by *general advertising*, and when results justified perhaps some special assistance might be given. One *trade* advertisement in trade journals is attracting notice. I send the Chairman a paper today with an advertisement I inserted. That is the first in this paper. I am arranging for a page with a startling illustrated advertisement in the Canadian Grocer. I have had an application for some aid to start a *Ceylon tea packet* in Toronto. The firm is a strong one and would cover once, any amount I gave. I have asked these to cover twice, when I might think of it. But so many are pushing Ceylons in Canada, that beyond general advertising, I don't consider we need do much. I might be tempted if I had our contribution twice covered.

Messrs. Brown Sinclair and I had an interview with Mr. Rogivue and his supporters here three days ago. They satisfied us as to the financial position, and we agree in thinking strong support should be given. Mr. Rogivue says advertising is very cheap in Russia where journals are few. He would advertise, distribute samples, and have a booth at the Novogrod fair if he is supported. His sales now are about 250,000 lb. per annum, and he expects a considerable increase this year. Indirectly, by stimulating other dealers to import Ceylons, he has done us great good

In 1890 India sent		100,000 lb.	to Russia.
,, 1894	,,	400,000	,,
Ceylon 1890		500,000 lb.	
1894		2,100,000 ,,	

I am, &c., WM. MACKENZIE.

———

(Extracts from letters from Mr. Mackenzie to Mr. Bryans representing Indian interests.)

I, and a good many others, regard the position of our teas as follows :—We cannot, for reasons connected with labor and scarcity of suitable available land, extend much in Ceylon. We are getting near the limits of our output. We have a market here for 100,000,000 lb. of our teas, if I may except the opinions of our largest handlers. We are besides cutting out India in *all other countries*, see our increase to such during last five years, and compare with India's.

Britain takes Indian teas, but last year *imports* slightly exceeded *deliveries*. Indian exports may increase very largely, and will have difficulty in finding markets. Ceylons, will, we grant, suffer if Indians have great increase.

We must, therefore, for our protection against India, endeavour to find outside markets for our teas. But surely under the circumstances India should make a more strenuous effort than she has hitherto done. Her £3,000 a year is a mere bagatelle.

Extract from Wilson, Smithett & Co.'s Circular, June 10th, 1895 :—

EXPORTS FOR MAY, 1895.

	Ceylon. lb.	Britist India lb.
To U. S. America ..	160,613	73,188
To Brisish North America ..	155,439	83,712

FOR 5 MONTHS, 1895.

	Ceylon. lb.	British India lb.
To U. S. America ..	640,346	473,775
To British North America ..	399,276	269,276

Extract from Colombo Chamber of Commerce Circular, June 26th, 1895 :—

EXPORT DISTRIBUTION, 1894-95.

	1894. Tea lb.	1895. Tea lb.
To Russia ..	16,588	136,196
To America ..	72,484	197,018

(Advertisement in the "Shipping and Commercial List and New York Price Current."

"TEA : What kind do you drink ?

"It is easier to imagine than describe the impurity imparted to tea, when rolled to produce the necessary twist, for nearly an hour in a hot room under a perpendicular sun by the hand and arm of an unclean, perspiring, and half-naked Jap or John.

"CEYLON TEAS ARE MACHINE MADE AND ABSOLUTELY PURE."

———

EXTENSION OF CULTIVATION IN SABARAGAMUWA.

The area of cultivation extends gradually but surely every year, though in the absence of any regular surveys it is extremely difficult to assign any definite acreage to this increase in native gardens. Tea cultivation is becoming more common among Kandyans, and in Kukulu korale, at Ayagama, considerable clearings, have been made by lowcountry Sinhalese.

Finlay, Muir & Co. continue their clearings at Hopewell and Meddekande, and Messrs. Leaf and Worship at Morahela are cultivating Liberian coffee as well as tea with cacao.

On receipt of the long expected survey plans of lands at Massimbula and Yahalewela in Atakalan korale, I hope to bring forward for sale lands well suited for cacao and coconut cultivation.—*Mr. Wace's Administration Report for 1894.*

———

CULTIVATING CAMPHOR.

In a recent issue of the *Gartenlaube*, the leading illustrated weekly of Germany, there is an article on "A German Industry in the Virgin Forests of the Island of Formosa." The writer treats his subject, which relates to the manufacture of camphor, from a patriotic point of view, not omitting to call attention to the fact that the intrepid pioneers to whom the extension, if not the creation, of the trade is due are his German countrymen. Only the coast-trip of the island, he says, is under effective control of the Chinese, and the dangers connected with the pursuit of camphor-distillation in the inhospitable forest-covered mountains of the interior are by no means slight, the country being inhabited by warlike savages, who distrust all foreigners, and entertain particularly inhospitable feelings towards the Chinese, whom they are fond of decapitating and torturing in a casual way—an attention which the Chinese repay with interest when they get the chance. In spite of these unpropitious conditions, German traders at the port of Tamsui, in the north of the island, organise regular camphor-expeditions into the interior, often many days' march from the coast. Camphor-trees, like primroses and Minor Poets, grow in clumps, but, unlike the last-named class, the trees cannot roll each other's logs. They must wait until the hardy German pioneers perform that work, cutting them up and boiling the valuable principle out of the chips, looking round uneasily the while to see that no Philistine Savage lurks in ambush. This is the reason

that the camphor trees (unlike the Poets) often flourish unrecognised for a century, without anyone to make known their essential worth. At last, however, their turn comes, and they are none the worse for the maturing—a ripe, fifty-year old tree yielding upon an average as much as a picul (133⅓ lb.) of camphor. The German traders at Tamsui own some 900 or 1,000 rough stills, which they carry along with them on their expeditions, and put up in the first favourable location they meet with. A charge of about 2 cwt. of camphor-wood chips yields from 4½ to 7 lb. of camphor, and this is a fair day's work for a still. The chips are boiled in water over an open fire, and the resulting steam, upon cooling, yields both essential oil of camphor and camphor. In Formosa most of the oil is thrown away; in Japan it is employed in lacquer-making, and for other purposes. From Tamsui the camphor is sent to Hong-Kong in cases, and is thence brought into European commerce. The yearly value of the trade has lately been about 35,000*l*. Now that the Japanese own the island, we may expect the enterprising German to take a back-seat; for if there is anything the Jap can do well, it is to make the most of camphor-wood and its solid and liquid distillation-products.

The *Spectator* adverts to a curious incident in connection with the Formosa cession. That event, he states, will directly affect every druggist and manufacturer of projectiles in Europe in consequence of camphor being produced only in Japan and Formosa, and of the use that is made of it in medical practice and in the composition of all the new explosives. The Japanese have limited and taxed the export of camphor, and its cost is therefore going up and may reach a high figure; but if the Japanese push their advantage too far, the *Spectator* thinks that Science will avenge herself and provide a substitute. The *Spectator* is so innocent that we scruple to add that Science is trying every day to make artificial camphor, and we doubt whether the Formosa affair will hasten the consummation a bit.—*Chemist and Druggist*, June 8.

INTERTROPICAL ADVERTISING.

A professional man writes:—

"I think the suggestion of 'Junior Planter' is a good one. If you had a heading in 'T. A.' 'Situations Wanted, Assistants Wanted &c.' many men would advertize. I send an advertisement to start." We are quite ready to devote a column of the *Tropical Agriculturist* to special short advertisements of the kind referred to at a very moderate rate, and our correspondent's will begin the list.

SPRING VALLEY COFFEE COMPANY, LIMITED.

REPORT.—To be presented to the Thirtieth Ordinary general meeting of the Company to be held at No. 5, Dowgate Hill, London, on Wednesday, the 19th day of June, 1895, at 1 o'clock, p.m.

The following annual accounts are now presented to shareholders, viz.:—Profit and loss account for crop 1893-4. Balance sheet made up to 31st March, 1895.

CROP 1893-94.

In last year's Report shareholders were informed that the coffee crop of the above season was estimated at 720 cwt., and it will be seen that the actual weight sold amounted to only 660 cwt. 1 qr. 13 lb., exclusive of clean and refuse coffee sold in Ceylon. This crop realised £3,345 11s 9d, the average selling price in London being 98s 5d, as compared with 99s per cwt. obtained for crop 1892-3.

The yield of Tea from Spring Valley amounted to 196,650 lb., the estimate in last Report being 200,000 lb., and this, together with 52,700 lb., bought from neighbouring estates and manufactured at Spring Valley, sold for £9,507 5s. 6d., or an average of 9·15d per lb., the average selling price last year being 9½d per lb.

Cinchona Bark to the extent of 23,641 lb. was also sold for £192 6s., the average selling price being 1⅞d per lb.

The total proceeds from the sale of produce amounted to £13,045 3s. 3d., and deducting from this £11,730 7s. 5d., the total expenditure in Ceylon and London, there remains a profit of £1,314 15s. 10d. on the year s working.

To this has been added the sum of £1,517 15s 11d brought forward from last year, making a total of £2,832 11s 9d at the credit of profit and loss.

On the 10th January last an interim dividend of 1½ per cent was paid on the capital of the Company, and the Directors recommend that a further dividend of 2 per cent be now declared, making 3½ per cent for the year, and leaving £32 11s 9d to be carried forward to next account.

The result of the above Crop is in accordance with the estimate given by the Directors in their last Report, in which they pointed out that season 1893-94 could only work to a small profit on account of the very small Coffee Crop, the large area of Tea not in bearing to be maintained, and the necessity of incurring considerable expenditure on the further extension of Tea.

CROP 1894-95.

The Coffee Crop for this season has been variously estimated, and at one time it was feared that it would be no larger than that of last year. The bushes are, however, reported to be maturing their Crop much better than was expected, and the last advices from the Estate point to a Crop of about 1,400 cwts. being secured.

The Crop of Tea from Spring Valley for 1894-95 is expected to be about 215,000 lb., against 196,650 lb. secured for 1893-94.

If the above Crops of Coffee and Tea are secured, the Board expect that a reasonable profit will be earned, but it must be remembered that the Company has a large area of young unproductive Tea to be maintained, and that it will also be necessary to still further increase the tea area during 1895. The acreage to be planted up will, however, largely depend on the condition of the coffee after the present crop has been gathered.

From the following statement it will be seen that 164 acres of tea have been planted up during 1894, bringing the total area up to 1,003 acres.

The area under tea on Spring Valley is as follows:—

T E A.

Over 5 years old	..		521 acres.
Planted Nov.-Dec.	..	1890	100 ,,
Do	..	1893	218 ,,
Do	..	1894	164 ,,
Total area under tea	..		1,003 acres.
Total area under coffee	..		565 ,,

The attention of shareholders is directed to the notice calling an extraordinary general meeting with regard to the acquisition of Kottagodde Estate by the Company. J. ALEC ROBERTS, Secretary.

10th June 1895.

NORTHERN PROVINCE.

(Extracts from Mr. Jackson's Report on the Mannar District for 1894.)

Area, 432 square miles; Population, 23,800.

The total of the paddy crop reaped during the year is estimated at 6,371 bushels, against an estimate of 5,035 reaped in 1893; while in 1892, when there was a good crop throughout the District, the amount reaped must have reached 150,000 bushels.

The tanning bark industry afforded means of support to a considerable number of people. The quantity of bark collected, however, has dwindled down to a fourth of that collected during the previous year, due to the increasing scarcity of bark in the jungle. Only 82 tons were exported during the year under review, as against 328 tons in 1893

(Extracts from Mr. Hopkins' Report on the Mullaittivu District for 1894.)

AREA, 936 SQUARE MILES; POPULATION IN 1891, 7,342.

FOOD SUPPLY.

Taking two bushels of paddy as yielding one bushel of rice, the grain available for food is: rice, 23,932½ bushels; dry grain, 6,016 bushels; total 29,948½

bushels, which is equivalent to ·408 bushels per head of population, which is perhaps fairly correct.

Palmirahs and Coconuts.—The planting of these is gradually increasing :—

	Palmirahs.		Coconuts.
Acreage in 1893 ..	798	..	782
Acreage in 1894 ..	806	..	814

There is no reason why large plantations should not be made in Karikkadnmulai South, where there is much suitable Crown land available.

Manioca.—I am glad to see that this valuable product has "come to stay." Introduced by Mr. G. M. Fowler in 1886, it made its way very slowly at first, but now the cultivation is advancing " by leaps and bounds."

Three cart loads of plants were sent from Jaffna by the Government Agent in 1886 and distributed amongst the people of Putukudiyiruppu. I can find no mention of the produce until last year, when the yield was reported to be 9,400 lb., value R470 at 5 cents per lb. In 1894 the yield was 20,000 lb., value R800 at 4 cents per lb.

Indian Corn is strangely neglected in the Wanni. It is reported that a quarter of an acre was sown in 1894, which yielded 5 bushels.

New Areas Cultivated.				Acres.
Paddy	..	..	..	102
Kurakkan	..	..	..	28
Coconuts	..	..	..	31
Tobacco	..	..	..	31
		Total	..	192

PROGRESS IN OLD PUSSELLAWE: AND THE NATIVE TEA INDUSTRY.

And old planter who had not been above Gampola and through Pussellawe for 30 years, gives his impressions of a recent visit as follows :—

" I drove six miles up the Pussellawe road last week in a burst of the monsoon ; but as it is nearly 30 years since I was last up there, I remember nothing but mere names, and an occasional field of coffee, and coffee stores now *non est.* But patnas have been, and are being planted up everywhere, rendering it impossible to recognize old boundaries to all but those engaged in, or watching the proceeding. Added to this, extensive *grevillea* plantations and old landmarks have become undistinguishable. It was thought the natives would never recover from the loss of their *coffee* gardens, but *tea* has more than compensated them in the surrounding patnas, and doubtless these have been the salvation of many of our own old estates also. For one native proprietor of coffee garden, there must be a dozen in tea. Little, well-planted, well-kept, model estates of 30 acres, giving 300 to 500 lb. an acre are common enough in native hands. Yet the old king still flourishes along this road better than I have seen it elsewhere, and all the trees are heavy with crops. If coffee was 'king,' tea seems likely to be 'emperor,' not 'queen.' I asked a native the other day, if he would sell such a garden of 31 acres, and he replied,

'NOT FOR R500 AN ACRE !'

A European bought one some time ago and I am told it is now giving 650 lb. made tea an acre, and that his price is R600 an acre—made out of patna land. These gardens are all, of course, in small tundus ; but there are large tracts of such land belonging to estate proprietors still unplanted. Against this, the tea on the old estates, planted in old coffee and cinchona land, does not seem to be doing half so well, and some of it rather badly. The old 'Black Store' on the Pussellawe road, so well-known, (and familiar enough to me 30 years ago) is still in existence, bearing evident signs of old age : store walls have followed decay, or ravages of white ants upwards, till now only the upper half is left. Between this and Gampola extensive tea factories enliven the scene in every direction, and strings of leaf carts meet you at every turn."

EMIGRATION FROM SOUTHERN INDIA.

Emigration from the Madras Presidency is the subject of a leading article in the *Madras Mail* of a recent date. A decrease of 17,746 in the number of emigrants, as compared with the previous year, is applicable to all the countries which tap India for their labour supply, with the single exception of Mauritius. The favourable character of the season in Tanjore and other districts is stated as the cause of the falling off, in this connection, it being explained that it is difficult to give accurate figures owing to the impossibility of distinguishing between passengers and emigrants. As regards Ceylon, it is stated that the number decreased from 91,021 in 1893 to 87,235 in 1894. Of the labour-agencies maintained at Madras by the Mauritius and Natal Governments, it is recorded that the accommodation and the treatment of coolies were all that could be desired. Interesting figures are given, having reference to Burma, the Straits Settlements, Mauritius and Natal.

PLANTING NOTES FROM COORG.

SOUTH COORG, June 19.—Dr. Voelcker has said that the laterite soils of the coffee and tea districts of Southern India are deficient in lime. Knowing the composition of bones and that they are largely made use of as manure for coffee, one is led to infer that this deficiency is made up for and hence the coffee thrives. But although bones may supply the food requirements of the trees of lime, yet it is to be feared that they play a very unimportant part in correcting any sourness that may result in the soil from an overplus of humus. This is a matter of some importance as all coffee estates are the sites of old forest land, which are consequently very rich in humus, and this is being continually augmented by cattle manuring, the burial of weeds and other debris and the droppings of shade trees. I am afraid that many of the ills that coffee suffers from are to be put down to the sourness resulting in the soil from an overplus of humus. Professor H. Tanner, F.C.S., says :—" The phosphate of lime present in bones is the tricalcic phosphate. When the bones are acted upon in the soil by rain-water, which, as you know, contains carbonic acid—or when acted upon by the carbonic acid produced in the soil—in each case we got one equivalent of the lime removed by the carbonic acid, and the tri-calcic phosphate acted upon then becomes bi-calcic phosphate and carbonate of lime. The bicalcic phosphate dissolves gradually in water, and is thus taken up into the circulation of plants in a soluble form." Bones, then, act in a small way like kuick lime in absorbing the carbonic acid produced by the decay of humus in the soil. But the union that is effected between the one equivalent of lime (tri-calcic phosphate consist of one part phosphoric acid and three parts lime) and the carbonic acid renders it inactive and of very little further good. And when the small quantity of lime that is liberated is taken into consideration, it becomes almost insignificant. The conclusion one naturally arrives at then is that, although bones are used as manure, applications of quick lime are necessary.—*M. Mail.*

TEA SWEEPINGS.—We are indebted to Mr. John Hamilton of Messrs. S. Rucker & Co. for an admirable letter on this subject which puts the whole business in a very clear light. Mr. Hamilton shows that those interested in tea plantations are no losers. For, although the tea sweepings may be from the shippers' own estates, by the system of weighing in vogue they had already been credited with the tea before the package was opened, so no loss falls on them. Re-selling tea sweepings is of course another question, and there the planter is injured, as Mr. Hamilton readily admits.

"THE DEVELOPMENT OF NEW MARKETS FOR INDIAN AND CEYLON TEA."

Under this heading, Messrs. Gow, Wilson & Stanton have prepared one of the diagram-circulars for which they are so famous and a supply of which is promised us by next mail. From a single copy in advance we gather that the present publication is due to the development of the trade in British-grown teas outside the United Kingdom and the considerable influence this has begun to have on the London market. We are told, in fact, that "the growing of Tea in British Dependencies is gradually revolutionizing the Tea trade of the world. The change of taste in favour of Indian and Ceylon Teas, which commenced in Great Britain, has been gradually but steadily extending to other countries," and then the new London firm adds:—"we are so impressed with *the absolute necessity which exists* for continuing to encourage foreign demand, that we again bring the matter forward without apology." By means of coloured blocks, the increased consumption in each country from 1890 to 1894 is very clearly shown. The result is very remarkable, for whereas in 1890, less than 13½ million lb. of Indian and Ceylon tea sufficed for the demand outside the mother country, in 1894 the total requirements equalled no less than 28,400,000 lb. or an increase in five years of considerably over 100 per cent. Nevertheless, that there is need for further efforts in order to get a greater hold of outside countries, is made evident from the following:—"With the coming crop from India estimated at about 140,000,000 lb., and that from Ceylon at about 91,000,000 lb., the importance of using every available means for increasing the consumption of British-grown Tea becomes so great that no efforts should be neglected by which new fields may be opened up The prosperity of the Tea trade depends mainly upon the creation of sufficient demand to cope with the ever-increasing production; and unless constant attention is bestowed upon the discovery of new outlets and the extension of existing markets, the danger of over-production which has been the ruin of so many flourishing industries, might prove equally disastrous to the Tea producer. Looking at the diagram, it is clear that many markets which five years ago were comparatively insignificant, have since attained sufficient importance to exercise considerable influence upon the course of prices." Interesting particulars are given respecting the Australian, American and Continental markets and the advance may be shewn as follows:—

Approximate quantities of British-grown Tea used outside the United Kingdom:—

	1890. lb.	1894. lb.
Australasia ..	7,500,000	12,300,000
U. S. A. ..	1,300,000	3,300,000
Turkey and Persia ..	1,100,000	4,300,000
Canada ..	800,000	1,900,000
Russia and Germany	600,000	2,500,000
All other places ..	2,100,000	4,100,000
	13,400,000	28,400,000

We shall not forestall by giving further details from a document which is certain to be of the greatest interest to every tea merchant and planter; but we may allude to what is said about "tea prospects." The industry, both in India and Ceylon, is considered "sound"; in the former it has lasted 50 years without any serious blight or enemy attacking it, and there are now some 380,000 acres under tea and a capital of about £15,000,000 sterling invested in the enterprise. In Ceylon, the industry is said to date back some 15 years—(but Loolecondura plantation has been uniformly cropped for over 23 years now)—and our area is put at 280,000 acres under tea, representing £11,000,000. We shall very shortly be able to give the exact figures for the Ceylon Tea Industry up to the middle of 1895, and we suspect they will not—allowing for native tea gardens—fall far short of the 300,000 acres. But we shall see. With the markets of the world before them, and no other countries besides China, Japan, and Java, producing any appreciable quantity of tea, the planters of India and Ceylon are rightly exhorted to make strenuous exertions in the direction of fostering the outside demands and then they may feel secure against any danger to the immediate future of their industry.

PROGRESS IN LOWER PERAK.

The following day Towkay Leong Fee, of Ipoh, came to see me and applied for a grant of 1,500 acres of land between Teluk Anson and Changkat Jong. He proposes to plant Coconuts, Liberian Coffee, etc.—*Mr. Wray.*

PROSPECTS OF TEA AND BIMETALLISM.

A shrewd observer writes:—"I see no cause for misgivings about tea—apart from the *rupee.* There is no knowing what Balfour, the bimetallist, may attempt during the two years he may be leader of the House. Albeit he knows no more about it than ——— you or I do."

THE SELANGOR PLANTATIONS SYNDICATE, LIMITED,

has been registered at home by Linklater & Co., 2, Bond-court, Walbrook, with a capital of £25,000 in £100 shares. The object is to acquire from H. Huttenbach certain estates, plantations, &c., in the state of Selangor, in the Malay Peninsula, and to develop and turn to account the same in such manner as the company shall see fit. The directors are J. Somerville, A. Kent, and L. Huttenbach. Qualification, one share; remuneration, 5 per cent of the net profits, divisible.—*Pinang Gazette*, June 17.

LIBERIAN COFFEE—JAVA COFFEE.

The British Consul of Batavia reports that the cultivation of the Liberian bean, both in Mid and West Java, is rapidly increasing, and the satisfactory results obtained from its introduction become year by year more apparent as the principal difficulties attending the preparation of this coffee for the market are gradually being successfully surmounted. As a result, a marked improvement in the appearance and quality of coffee is noted, and its favor is becoming more and more assured. The continued recurrence of the so-called "leaf" disease in the Java coffee on low-lying lands, from which the Liberia still preserves comparative—though by no means entire—immunity causes more confidence to be felt in the latter, and many lands which have suffered most severely from the ravages of this disease in the Arabian plant are being replanted with Liberia. It has been decided to give up the Government cultivation of coffee in the Krawang Residency, and on January 1st, 1895, the law rendering the delivery in that district to Government obligatory was repealed.—*American Grocer.*

QUININE AND IPECAC IN DYSENTERY.—The following combination has been used in the Mandoli Regiment at Bhurtpore in many cases of acute dysentery. It is said never to fail:—Sulphate of quinine, 2 grains; powdered ipecac., 5 grains; ammon. chloride, 10 grains; tinct. opium, 12 grains; water, to 1 ounce. To be given every four hours (*Practitioner*, May, 1895.) *Pharmaceutical Journal*, June 15.

THE MALAYAN PENINSULA AND ITS MINERAL AND PLANTING ENTERPRISES.

Mineral statistics of the world, show the important position held by the Malayan Peninsula in respect of mineral resources. We ask ourselves what the relative condition of Ceylon would be were she as highly favoured as to mineral deposits as is the country of which the Straits Settlements form a chief division. Our own output of minerals is almost entirely confined to plumbago, with a certain proportion of gems in rubies, sapphires, &c., and the export value of the whole is insignificant as compared with that of the exports of the Malayan Peninsula. Since 1888 the output of tin alone from the latter has been 30,000 tons, being more than half of the total production of the world in the time mentioned. The balance is made up of the production of England, stated at 9,000 tons; that of Australia at 6,500 tons; and a residue from America, Tasmania, and some European countries, at 13,090 tons. What coal is to Great Britain, tin must be to Singapore and surrounding States. It is a never-failing source of revenue and we are only surprized that, as the Straits Settlements command the whole of the trade, they have not long ago surpassed in the race for wealth every other Colony possessed by Great Britain. As the great wheat production of India and Canada has almost wiped out the cultivation of the staple at home, so has the tin industry of the Malay Peninsula operated upon the output of the tin mines of Cornwall. Cornish enterprise has had to compete with the almost entirely surface yield of the same metal in the highly favoured peninsula.

If, in the future, our Eastern neighbour can be made in addition to rival the planting industries of Ceylon, it must attain a pre-eminence in prosperity. With its enormous natural advantages it is hard to see how its progress towards this pre-eminence can be checked. Already many Ceylon planters have become the pioneers of tea and coffee cultivation both in the British Provinces and in the Protected States. A wise policy has for years been pursued towards the latter, and their Malayan rulers seem to have cordially availed themselves of it. Among these none have shown themselves more capable than our past frequent visitor, the late Sultan of Johore. Should his successor continue steadfast to the policy of progress inaugurated by the deceased Prince, and that policy be followed by other native rulers, the day must soon come when the Malayan Peninsula will be one of the most progressive and wealthiest corners of the globe.

TEA SHIPMENTS FROM COLOMBO TO THE UNITED KINGDOM.

The figures, month by month, and the official estimates, are respectively as follows:—

	Shipments. 1894.	Shipments. 1895.	Estimate. 1895.
January	6,255,140	8,252,147	7,500,000
February	4,912,602	5,903,169	6,500,000
March	7,208,470	6,752,570	7,250,000
April	7,006,095	7,080,228	7,600,000
May	8,104,333	10,527,182	9,500,000
June	9,225,740	8,255,000*	9,250,000
Total	42,712,380	46,770,296	47,600,000

* About.

The above shews that the estimates have generally been liberal and yet wonderfully correct, seeing that for the six months, they are less than one million lb. in excess.

VARIOUS PLANTING NOTES.

Crops in India.—Says the *Pioneer* of June 30:—

The latest season report shows that the crops in every part of India are doing well, and 1895 may prove a most prosperous year for the cultivators. The cattle are in good condition, and fodder is reported sufficient from every province.

Wanted a New Oil.—As regards essential oils, a letter from Mr. Geo. Piesse, of the perfumery firm of Piesse and Lubin, says "if as a result of distillation, you can find an essential oil which is soluble in spirit and if *odourless*, it will be of much commercial value, as such an oil would be used for the reaction of strength of ottos without destroying their bouquet. The odour of some woods, flowers, plants etc., is so intense and so small in bulk, that they have to be reduced in perfume and increased in bulk, for ordinary trade and manipulative purposes. This is at present done with spirit or castor oil, both of which are imperfect."

The Importation of Bananas into America.—In a recent Consular report from Baltimore, it is stated that of all the tropical fruit now imported into the United States, the Banana reaches there in the largest quantities. Its cultivation for the foreign market in Jamaica only dates back about twenty years, and it is from that colony that fully eighty-five per cent. of those consumed in the Atlantic States are now derived. There are at present four steamships exclusively employed in the Banana trade with the port of Baltimore, and which can land their fruit from Port Antonio in a little over five days, and almost as fresh and green as when cut. A proportion of each cargo is disposed of in the city of Baltimore, but the largest part is transferred to heated or refrigerated cars according to season, and sent by rail as far west as Chicago. In connection with the orange culture in Florida, it is stated that the crop which is the chief source of supply for the eastern States was completely destroyed by the severe weather, and that the growers are actually buying oranges in California to meet their engagements.—*Gardeners' Chronicle.*

The Increased Production of Tea.—At the annual meeting of the Dooars Tea Company the Chairman specially referred to the question of the enormous increase in the production of tea both in India and Ceylon, and said this would be one of the dangers they would have to meet, unless they could open up new markets abroad:—

He feared that without some such relief it would be a case of "the survival of the fittest," but he was pleased to say that the Dooars Tea Company were strong enough to stand the test and that they would be found among the fittest. It was certainly a matter of congratulation to observe how by degrees they were obtaining new markets. Probably there was nothing that required the attention of all who took a keen interest in the welfare of the tea industry more than this question of new markets. During the past year he had been on the American committee which was endeavouring to push the consumption of Indian teas there and he was quite certain that Indian tea was getting better known and appreciated in America. The danger, however in this country in their having a larger supply than they could get rid of was great, and to show them how they had to guard against this he would point out that the tea crop for India last year was 125,000,000 lb. of tea, and, according to the latest estimates, this year's crop would be 140,000,000; while the crop for Ceylon last year was 84,000,000 lb. and this year it was estimated to be 91,000,000 lb. showing altogether an increase of some 21,000,000 lb. over last year. In this country the normal increase was only 2,000,000 lb. so it would be seen that it was of vital importance that the exports to other countries should be increased,

Spring Valley Coffee Co., Ld.—We are now enabled to publish the Report of the sister Company to that of "Ouvah," given yesterday, Mr. Alfred Brown being Chairman of both, and the Colombo Commercial Co., local Agents. The Spring Valley is not quite so prosperous, but its total of 3½ per cent of dividends is likely to improve and the Company has done well to acquire Kottagodde estate adjacent to Spring Valley and which has a good deal of tea further advanced than that on the main property. We think this is bound to strengthen the "Spring Valley Coffee Co."

Planters, Manure and an Analytical Expert.—Our London Correspondent in writing about the need of an Expert on the spot for planters to consult in connection with their manuring operations, forgot that we have Mr. M. Cochran, M.A., F.C.S., who has already done so much good analytical work here, and in conjunction with Mr. Hughes, and who, we have no doubt, often now is consulted by planters to test the manures they buy or import. Mr. Cochran's Manual lately published by us, ought to be in the hands of all planters engaged in extensive manuring operations; for it contains a vast amount of information of service in a variety of ways to Managers of Estates.

The Strangest Insect in the World.—The aweto, as the Maoris or natives of New Zealand call it, or *Hipialis virescens*, as naturalists term it, is found in New Zealand, and is a vegetable caterpillar of from three to four inches in length, and, so, far, science has not been able to say whether it is a vegetable or an insect. It is always found at the foot of large myrtle-trees that have beautiful red flowers on their stems, and a beautiful creeping clematis as white as the snow. The Maoris call this tree by the name of rata. The aweto buries itself among the roots of the rara, a few inches below the ground, and there lives until it is full grown, when it undergoes a most wonderful change. The spore of a vegetable fungus, termed by naturalists *Sophæria robertsii*, fastens itself to the neck of the caterpillar, just between the head and the first ring, and then grows upwards to the height of from six to eight inches. Many people assert that there is never more than one stem, but such is not the case, for some have been found with two stems, although very rarely. The stem shoots up out of the ground, above where the caterpillar is living, about two or three inches; below the earth it grows into the aweto, until it fills up every possible space within the outer skin without changing the form of the insect in the slightest way whatsoever, but simply substituting a vegetable matter for animal matter. As soon as this takes place both the plant and the caterpiller become dry and hard and die, but retain exactly the same form as when alive. The whole has a brown colour, and the insect appears a wooden caterpillar, with a huge horn standing up from the back of its neck. How the caterpillar manages to propagate its species no one can tell. Usually the caterpillar becomes a chrysalis, the chrysalis changes into a moth, the moth lays eggs, and these eggs again become caterpillars, and so on without stopping. Many reasons are given why the plant shoots up from the back of the neck of the aweto. One is that the aweto has a slimy substance oozing out from its neck, which, while the aweto is boring at the foot of the rata tree for its only food, catches the seed of the fungus and holds it fast there till the latter begins to grow. When it has sucked all the vegetable life out of the aweto it must naturally die, for it finds no further nourishment. The aweto is often found in large numbers.—*Public Opinion.*

The Directors of Ouvah Company Limited—have a very satisfactory Report to present this time and we congratulate the shareholders on its contents. A full 6 per cent for the year will be realized in dividends and the prospects are good. The £10 paid shares of the Company which a few years ago were under £3, are now fast approaching par.

Camphor Tree Cultivation.—We attract attention to further interesting extracts given elsewhere bearing on this subject. We have no doubt that a good many planters will give a full and fair trial to the tree, now that plants have been made available. Our contemporary of the "Times" takes an utterly wrong view of the comparison which may be instituted with cinchona. Is he ignorant of the fact that the bark tree proved the salvation of scores if not hundreds of Ceylon planters—the bridge which enabled them to cross from the era of "coffee" into that of "tea?" That there came a wild rush and loss of money afterwards, carries its own lesson for the future camphor-tree planter; but certainly the lesson is not that there should be no fair trial of the new product. It will be time enough to bring up the latter portion of our cinchona experience when we see a few scores or hundreds of acres under camphor beginning to turn into thousands; if such a time should ever come.—Meantime, Mr. Nock informs us that he has not got a tree large enough, he thinks, to experiment with; but he has coppiced some at Hakgalla with good effect and may be able to collect from 50 to 100 lb. of bark and twigs to experiment with. Perhaps Mr. Cochran of Colombo could give an opinion as to the value of the product.

The Five-Fingered Orange.—The five-fingered orange is a queer thing. It grows in exactly the shape of a human hand, with a thumb and four fingers. It is a half-open hand, that of this curious fruit, and the close resemblance to a lean, long-nailed Chinese hand is startling. Even the nails are identical, hard-pointed and claw-like, tipping the orange fingers with a length equal, in some cases, to three inches. It is no interloper in a well-regulated family of oranges, but a regular member, belonging to the orange variety. It has a family name and a Christian name of its own, but its pet name is "five-fingered orange," and nobody but the botanist cares to call it by the long one, which means the same thing. The orange tree is a ragged little shrub that does not average more than five or six feet in height. It does not grow straight, and it would be very difficult to find two consecutive inches in the entire tree whose line of direction is the same. Even the branches grow in spiral forms, so that the width of the tree is often as great as the height. There is a generous supply of thorns hidden under the leaves; they are slender, tough, and long, and are located in all sorts of unexpected places. The leaves are fleshy, long, and narrow, and of a dark green colour. They resemble a lemon leaf more than an orange leaf. Indeed, in both this instance and in the colour of the ripened fruit, this singular plant seems to claim a very close cousinship to the large lemon family. The flowers come out in June and July, and are very similar in appearance and odour to the ordinary orange blossoms, save that instead of the familiar creamy white colour they have a delicate pinkish tint which is very beautiful. They commonly grow in clusters of two or three blossoms on alternate nodes. The strangest thing connected with the prefume is that it is the

fruit and not the flower that is most ordorous' The fruit when ripe is so redolent that its scent can be recognised a mile from where the orange is growing.—*Public Opinion.*

TEA IN IRELAND.—Some curious information on this subject will be found elsewhere given before a Royal Commission: Irish witnesses made out that the finest of Indian teas were drunk in Ireland, that tea makes an excellent substitute for milk and meat and that if the population of Ireland had not been allowed to fall off through emigration, Ireland would require nearly a million sterling worth more of tea per annum than at present.

ARECA PALM: ABNORMAL GROWTH.—A Negombo correspondent sends us a part of the top of an areca palm with a series of young plants developing from the fruit—a case of vegetable monstrosity in fact. The Director of the School of Agriculture who has seen it, writes:—

"Instances are fairly common of premature germination of seed as in the jak fruit and papaw—the latter fruit when cut very ripe sometimes presenting a mass of little seedlings. But to judge from the specimen sent the ovary would seem not to have developed into the typical fruit, and the ovule on being fertilized would appear to have passed into seed (which then germinated prematurely) while the pericarp became suppressed. It is impossible to assign an ultimate cause for such abnormal growths."

SISAL HEMP (AGAVE RIGIDA, VAR. SISALANA) AT VERA CRUZ.—In a report on the trade and commerce of Vera Cruz, reference is made to the Henegren or Yucatan hemp, which has become more generally known of late as Sisal stated to be from the fact that the fibre was first exported from Sisal, a small coast port about 27 miles west of Progreso. In view of the low price that has ruled from Sisal hemp for some time past, it will be of interest to know that the export from Vera Cruz varies from 19,000 to 45,000 bales per month, the average weight of each bale being about 350 lb. It has been remarked that this year 1895 will have the maximum quantity of land under hemp cultivation in Yucatan, which means that the production of hemp has reached its limit. Under the existing circumstances of low prices, high monetary exchange, and scarcity of the Indian labour, many of the farmers are planting Maize instead of replanting hemp. New lands as well as old hemp-growing areas, are now being used for growing Maize and other products.—*Gardeners' Chronicle.*

COFFEE IN SIAM.—A recent visitor to Singgera tells us that he found there a coffee estate, managed by a European, which was most healthy and flourishing. There was not the faintest trace of disease, while every indication was present of a bumper crop in November. There were 500 acres all fully planted with trees 8 ft. apart. In the centre of each group of four is a pit about 18 in. deep, and measuring 18 in. by 12 in., into which all the prunings are thrown, together with cattle manure. The son of the Governor, we are told, has also gone in for the same cultivation, but on a different principle. He has 400 trees planted about 20 ft. apart, and he manures them in the Java style. That is to say, he digs a circular trench one foot wide and two deep, at about 18 inches from each tree, into which he puts cattle manure. Then, at about 6 inches from the trunk, he digs a second smaller trench in which rotten fish is placed. The result of this rich feeding has been that the trees went ahead well at first, but are now beginning to droop. We also know of a coffee plantation not 100 miles from Bangkok the progress of which is being very anxiously followed. So far all is going well, and the first crop is beginning to shew itself. It looks so promising that it seems a pity to have to sacrifice it to the law which declares that, to allow the first crop to mature, is to ruin the trees. —*Siam Observer.*

CACAO AND "WILL YE NO' COME BACK AGAIN."—The American cacao buyers whose absence from the London market we have all had to deplore, and whose spirited bidding and solid coin are still with gratitude remembered, are said to be turning up again at Mincing Lane and "feeling around" cacao. A London correspondent writing on the 25th June says:—"The market for cacao is better during the past two or three weeks, and our brokers are more hopeful of the future. Some American orders have come on the market, and prices have hardened."

THE "OIL FIND" AT CALCUTTA.—With reference to the supposed discovery of kerosine oil in Calcutta, the theory now put forward to account for the phenomenon is that, some time ago, retail dealers in explosive oils, such as kerosine, were restricted from having on their premises, at any one time, more than a few cases. The dealers, however, found it more advantageous financially to purchase a large number of cases at once; and to evade the restrictions imposed upon them; all cases in excess of the number allowed by law were carefully buried so as to be out of the way when the authorities came to inspect their premises. It is supposed that, while the cases lay buried on the plot of ground in question some or all, of them succumbed to the effects of damp and rust, and the contents of the cases escaped into the ground. To make matters certain, the piece of ground not yet excavated will be dug up, and there is little room for doubt that what remains of the original oil cases will be found.—*Times of India.*

THE CEYLON CINCHONA ENTERPRISE.—What a pity that "Baillie Street" planting publications are not in the hands of our contemporaries. The following is from the local "Times":—

A handful of early pioneers, who had planted cinchona unwitting of the high value of its bark, and who were able to harvest before the great rush into cinchona in 1878, 1879, and 1880, undoubtedly made large sums of money. Those who were wise enough to grow cinchona seed or plants for new clearings also did remarkably well, but for the remainder, who made use of this same seed and these same plants, only to find their fields of cinchona killed out ruthlessly and suddenly by canker, in spite of all precautions, their experiences were sad in the extreme. Now, the first private planting of cinchona in Ceylon took place in 1868, and the prices continued to be remunerative up till 1884-5—or for 17 years. One would think, following the above parallel that the time to warn Ceylon Camphor pioneers would be in 1912 and not in 1895—just as the enterprise is beginning!

THE TEAK TRADE OF SIAM.—An extremely interesting State paper on the teak trade of Siam has been written by Mr. J. S. Black, Acting British Vice-Consul at Bangkok. He states that practically the whole of the extensive teak forest of Siam are in the hands of British subjects, either in virtue of original lease, or by an arrangement which practically gives a lease of the forests. Nearly half of the purchasers of the wood are also British subjects, many of these are Burmans, who are generally men of small means. With the traditional tact of their race these tradesmen manage to win the confidence of Bangkok capitalists who advance them almost the whole of the necessary outlay. This is no ordinary undertaking, for three or four years must elapse between the times, when operations commence to the time when the wood reaches the market. In addition to this large numbers of expensive elephants require to be secured, while considerable disbursements have to be made in the shape of advances to coolies. Serious loss is occasioned every year, again by thefts of the teak, which is apt to get stranded in the rice-fields, or stuck in the banks in its passage down stream. At these points thieves are always watching, and they seldom miss an opportunity of making off with the loss. More than half a million sterling is said to be embarked in this industry.—*Pioneer*, June 23.

THE MONSOON IN SOUTH OF INDIA.—Great uneasiness is felt in Madras at the continued delay of the monsoon. The crops in South India, are beginning to wither up, and, unless rain comes soon, famine is sure to follow. The heat is intense. In Bombay rain began falling on the eve of the 11th instant, and it is hoped that the monsoon has set in.—*Madras paper.*

"A SHORT GEOGRAPHY OF BENGAL" by W. H. Arden Wood, B.A., F.C.S., Principal of La Martiniere College, Calcutta, Examiner to the Calcutta and Punjab Universities with maps and illustrations, is a very full and useful little book giving first of all a general view of the province, (its surface features, river system, climate, plants and animals, products, industries and commerce, &c.) and then dealing separately with each division,—Bengal proper, Bihar, Orissa and Chota Nagpur. There are 12 minor maps besides the chief one and some 20 other illustrations, one showing the "Snowy Range above Darjeeling from the Railway and Cart Road" being particularly effective.

TEAS AND THEIR STRENGTH.—The Budget Speech specially dwelt on the difference in strength between Indian and China teas in referring to the supercession of the latter in the United Kingdom. Sir Wm. Harcourt said :—

In quantity, the increase is 5,650,000 lb. in excess of that of last year; and the rate of increase is 2·6 per cent, which is a good deal more than twice as great as the increase of the population. It is a satisfaction to know that, whilst our people at home have the benefit of the increased consumption, our dependencies abroad have the advantage of the profits of production. (Hear, hear.) The teas of India and and Ceylon now constitute 86 per cent. of the whole, whilst in 1864 they formed only three per cent, of our consumption. And it must also be borne in mind that the much stronger growths of Indian tea, admitted at the same duty, really represent a far larger consumable commodity than corresponding quantities of the Chinese growth, and I would ask the Committee to observe this fact, that really the introduction of this stronger infusion at the same duty is, in fact, equivalent to a reduction of the tax, because you get a larger consumable quantity of liquid at the same tax

THE INDIAN TEA CROPS ESTIMATE.—In some quarters the belief in tea as a paying speculation is unbounded and large sums of money are being invested in gardens. It is only to be hoped that the larger outturn will not so flood the market as to bring down prices to a point which will not pay the proprietors. The following table, compiled by the Indian Tea Association, gives the estimated outturn from the various districts for 1895-96 :—

	lbs
Assam	57,531,590
Cachar	19,403,880
Sylhet	22,272,900
Darjeeling	8,069,210
Terai	3,176,000
Dooars	19,854,240
Chittagong	112,000
Chota Nagpur	238,800
Kangra	3,000,000
Dehra Dun, Kumaon, and Kangra	2,006,000
Private and native gardens ..	4,000,000
Total	139,690,520

As compared with the actual outturn of the past year, this shows an estimated increase of 13 million pounds—an advance of 10 per cent., the bulk of which will be thrown upon the London market. The trade in China tea is declining gradually and may be said to be practically out of the field; and yet it is an undoubted fact that by removing taxes and other obstructions, China tea could be so reduced in cost as again to enable it to take its place as a competitor.—*I. P. Gazette*,

THE CHINESE LIKE TEA-TABLOIDS.—Forwarding tea to China is very like sending coals to Newcastle but that is what Messrs. Burrows, Wellcome & Co. have been doing. A correspondent of the firm's in the interior of China (South Shan-si), in acknowledging two cases of tea-tabloids, says :—"All over China north of the Yellow River, tea is comparatively little drunk, the soil and climate being unsuitable for its cultivation, and the time and difficulty encountered in transporting up from the Yang-tse Valley rendering it somewhat expensive. Boiled water and thin gruel of millet are the usual drinks of the masses so that the tea-tabloids are greatly appreciated. The ingenuity which is displayed in the tabloid is very striking in the eyes of the Chinese as well as our own."—*Chemist and Druggist.*

KINDS OF IVORY.—Four principal kinds of ivory are known in the market: that of Guinea, the Gaboon, or Angola, which is a little greenish, so that it is sometimes called green ivory, and which whitens with age; Cape ivory, which is of a dull, light, somewhat yellowish colour: Indian or Siamese ivory, very rare and white, with a tinge of rose colour; and the fossil ivory of Siberia, remains of the mammoths of the olden time. Of these, the West African ivory is most highly prized, being finer and more transparent than the others. It is pretended that experts, when they see a well-preserved tusk, can tell whether the animal that wore it came from East or West Africa, or north or south of the equator. The farther north the animal's habitat, and the more elevated and dry the situation, the more the ivory is coarse and inferior. The principal market for ivory is at Liverpool, and nearly one-third of the stock imported there is used in the Sheffield cutleries. Another considerable market is at Antwerp. The annual exports of ivory from Africa represent the product of sixty thousand elephants, and this means a rapid reduction of the elephantine population of the continent. Various artificial ivories, or imitations, are manufactured to supply the increasing demand. There are vegetable ivory—tagua seed from Peru, or wood injected with chloride of lime; sheep bone, macerated with the wastes of white skins; paper pulp with gelatin, celluloid, and caoutchouc; a preparation of potatoes; and a substance obtained by treating milk with certain reagents. The expediency has been suggested of establishing elephant farms, to form a more certain source of supply than hunting wild elephants is destined to become. Ostrich farming has proved practicable, why not elephant farming, too ?—*Home paper.*

THE JAVA GOVERNMENT CINCHONA PLANTATIONS.—We direct attention to the following interesting statement referring to the Cinchona industry in the hands of the Government in Java :—

The cinchona bark harvest in the Government cinchona gardens in Java in 1894 was 590,214 half-kilos, of which 522,051 half-kilos were Ledgeriana bark, possessing an average yield of 6·55 per cent of sulphate of quinine. The total cost of harvesting, transportation to the trade centre of Bandoeng, and other expenses in 1894 were 52,195 florins. The total cost per half-kilo of producing cinchona-bark in the Java Government gardens and supplying it free to the collecting centre has been :—

In 1890	per half-kilo	22 30c	or about	4d	per lb
1891	do	19 15c	do	3¾d	,,
1892	do	15·87c	do	2⅞d	,,
1893	do	16·29c	do	3d	,,
1894	do	14 71c	do	2¼d	

These figures show a remarkable reduction in the cost of production, but it must be remembered that nothing seems to be allowed for the cost of land or capital, and that the figures therefore do not represent the probable cost of production to a private planter. The expenses on the bark in Java from the plantation to ship board are 4c per half-kilo (equal to about ¾d per lb.). The net profit of the Government gardens in 1893 was 18,449 florins on the sale of bark, and 745 florins on that of young trees and seed.—*Chemist and Druggist.*

COFFEE PLANTING IN MEXICO.

City of Mexico, May 20.—The demand for good coffee lands in Mexico continues, although few sales of importance have been reported recently, and the work of planting young coffee trees goes on without abating. It may be said that within the last three years the coffee industry of Mexico has received more attention than all others combined ; it now, according to the *Two Republics*, "ranks second or third in importance," and it is believed that within a few years it will take first place, leaving silver mining the second place. There is every reason why coffee culture should assume a very important place among Mexican industries ; the wonder is, in fact, that it should not have taken that place long ago. But there is no reason why other industries quite as reliable and remunerative should be abandoned for coffee. Yet at present there is danger of too much attention being given to coffee. It is a convenient fact that the soil that will produce coffee will also produce many other valuable articles of commerce ; so that on the same plantation may be grown coffee, sugar, tobacco, and cotton, besides cereals and vegetables. Of course, all these crops cannot be grown everywhere ; but there are many sections where they can be, and everywhere in the semi-tropical regions the majority of them can be grown. This being the case, it would seem to be rash to place all one's reliance on a single crop, no matter what that one may be. In fact, the future of the tobacco and sugar industries of Mexico is probably as bright as that of coffee. The quality of Mexico's tobacco is being constantly improved as the planters gain experience, and the foreign demand for it is constantly increasing ; so that it may be taken for granted that the time is not very far distant when tobacco growing will be one of the country's greatest industries. When it is stated that, notwithstanding the fact that Mexico probably possesses more first-class sugar lands than any other country, she does not manufacture enough sugar to supply the home market, it will be understood that there is a future for the sugar business in Mexico. In some sections cotton must assert its importance, and should not be neglected in those sections, since Mexico, instead of exporting that fibre, is actually importing it. Then there are the cereals which grow practically everywhere coffee does, and many valuable vegetables that the coffee planter should not neglect. Experience has everywhere proved that it is not wise to centre all hopes in a single crop. The Southern planters of the United States have learned by bitter experience that it will not do to place their entire trust in sugar or cotton ; but in both combined they may rely, or in either combined with cereals or vegetables. The coffee growers of Mexico should likewise be fruit growers, sugar growers, and tobacco growers, as well. One crop may fail, and possibly two, but it is very seldom that all crops fail ; there may be overproduction of one crop, but hardly more than one the same year."

WALNUT-SHELLS IN GROUND CINNAMON.

It appears that there is a big demand in certain quarters of commercial London for walnut-shells, which are used for adulterating ground cinnamon. Dr. Bernard Dyer and Mr. J. F. H. Gilbard have been looking into the matter, and they say in the *Analyst* that the microscopic detection of powdered walnut-shells in the cinnamon is not difficult, the selerenchyma of each being so different. The following figures of the chemical examination seem, however, to be more generally useful :—

	Average of five samples of chips and quill	Ground walnut-shells
Moisture (loss at 100deg C)	12·41	9·97
Approximate volatile essential oil -	1·57	0·27
Fixed ether extract -	2·14	1·60
Alcoholic extract after ether	12·57	3·67
Total ash less sand -	4·22	0·87
Ash soluble in water -	0·46	0·37
Ash insoluble in water -	2·76	0·50
Fibre -	34·25	47·67
Nitrogen -	0·51	0·20

The items 'volatile oil,' 'acoholic extract,' 'insoluble ash,' and 'nitrogen' would all be of assistance in calculating the percentages in mixture of ground cinnamon and walnut shells.—*Chemist and Druggist.*

CULTIVATION OF THE ROSE.

(BY A HOOSIER, FLORIST, INDIANA.)

Situation and Soil.—The rose does not require as sunny a situation as is often given it, but can be grown far more satisfactorily if planted where it will get all the morning sun, but be shaded through the afternoon ; and they should not be planted so near to trees as to be overhung by them.

The best soil for rose gardens is a compost of two parts rotted sods and one part well decayed manure. The manure should not be on the surface, but buried down into the earth, for the roots of roses penetrate a considerable distance. A quantity of fine gravel and sand mixed through the soil will be highly beneficial, as this will give a drainage.

Summer Treatment.—If the season is hot and dry, the first part of July spread the clippings of the lawn around the rose bushes, to the depth of six inches ; the growth will then not be retarded by the drought, and the latter part of August will give again a shower of fine bloom. Shallow hoeing can be practiced weekly with good results. A liberal supply of water twice a week will be sufficient, unless the season is very dry.

Stimulants.—The best stimulant is liquid manure made from old rotted cow manure. To prepare it take two gallons of manure, pour over it boiling water to extract the strength and destroy insect life. The liquid drained from this quantity of manure and mixed with clear water, until it is the color of tea will be suffieient to water three dozen rose bushes.

Soot tea can also be used occasionally with happy results. A quart of boiling water poured over a table-spoonful of soot will make a fine fertilizer. One half-pint of this liquid can be used to each plant once every month. The two stimulants must not be used together.

Ants a Pest in the Rose Garden.—It is very often the case when rose bushes do not thrive as they should, that the trouble is caused by ants burrowing around them. A good remedy for this is to dig a good coating of ashes into the soil around them. This never fails to drive all insects from the soil, and soon the bushes will resume a healthy look, and grow all the better from the application of this fertilizer.

Grubs.—The grey grub is very destructive to young rose bushes. The surest and best way to get rid of the grubs is to lift the bush and search the soil carefully. They are often found one foot away. Before planting again scatter a little wood ashes through the soil. Grubs are not found of soil which contains wood ashes.

Insecticides.—There is nothing better to keep rose bushes free from all kinds of insects than tobacco insecticide soap. If this is used on the foliage there will be no trouble with lice, worms or any of the many pests which soon destroy the foliage and flowers.—*The Mayflower.*

TAR PAVING.

This is made by mixing with fine breeze or small coke just enough of thick refuse coal tar to make it somewhat sticky. After preparing the foundation (which, by the way, should be of concrete), put a thin layer on the smooth prepared surface, then spread a couple of inches of metal or pebbles, or coarse gravel, or even small coke, then another layer of prepared breeze covered lightly with fine sand. The whole is now patted to an even surface. Sifted coke ashes will do; it is essential that all ingredients should be thoroughly dry, and the tar made hot and mixed with breeze and put on whilst hot. —*From Work* for October.

A SIMPLE AND EFFECTIVE WAY TO STAIN FLOORS.

Take one pint of methylated spirits, in this dissolve 4 oz. of shellac, then add as much brown umber as will give the tone required in at least two applications; this will give a walnut finish. Similarly, Venetian red may be added for mahogany, and yellow ochre for pine. When dry, smooth down with fine glass-paper; it may then be kept looking fresh by wiping over with a little linseed oil applied with flannel. It also forms a capital basis for wax or French polish; or it may be finished bright by giving two coats of best oak varnish.—*From Work.*

THE KIRKLEES ESTATE COMPANY, LIMITED.

The memorandum of Association of "the Kirklees Estate Company, Limited," is published in Friday's *Gazette.* The object for which the Company is established are stated to be: To purchase all that estate called Kirklees, situated in the District of Uda Pussellawa, Ceylon, together with all the buildings, machinery, and stock thereon and thereto belonging, and the crops thereof (as from the first day of January, One thousand Eight hundred and Ninety-five, for the sum of Ninety thousand Three hundred and Fifty-two rupees and Ninety-four cents (R90,352·94) Ceylon currency, upon such terms and conditions as may be agreed upon between the Company and the proprietor or proprietors of the said estate, and to manufacture tea leaf and (or) other products. The nominal capital of the Company is R100,000 divided into 1,000 shares of R100 each. The following gentlemen have already purchased a share each:—Messrs. James Forbes, Thos. Jones, G. W. Carlyon, G. H. Alston, Alf. H. Ayden, A. J. Sawer, and C. E. H. Symons.

FORMOSAN CAMPHOR.

Formosan resources and industries are of course attracting a good deal of journalistic attention in Tokyo. The camphor forests of the island are spoken of as a probable source of wealth, in view of the facts that Japan and Formosa are practically the only camphor-producing countries in the world—the Borneo vegetable being of a different character—and that the demand for camphor has increased of late years. A naive comment is made by one of our vernacular contemporaries, namely, that camphor has been discovered to have properties fatal to the mildew parasite; an assertion that might have been addressed with greater interest to our ancestors several generations ago. What we specially note, however, is that the writers in the vernacular press seem to ignore the important point that Formosan camphor can not be suitably refined without the addition of a certain proportion of the Japanese vegetable. If the experts of this country can discover the cause of that peculiarity, they may succeed in imparting a greatly increased value to the camphor forests of Formosa.—*Japan Mail.*

HYDRAULIC LIMESTONE IN CEYLON.

We are asked if we can mention any localities in Ceylon in which limestone of a character suited for burning lime having an hydraulic property can be obtained. So far as we know there are only one or two districts where stone of this description is found. Recently a letter appeared in these columns the writer of which attributed the fertility of the soil of the Jaffna peninsula to the presence of an extensive formation of limestone. This is to be found therein in deposits over a large area, and it is a very curious formation. It is to the presence of this that the growth of the peninsula is due. Upon and around it the coral insect has for ages been busy, and gradually the neck of land with its outlying islets, have arisen above sea-level. Owing to the large admixture of magnesia in this limestone, its result when burnt is distinctly hydraulic. Indeed it has been used for construction work in the salt lagoons that intersect the peninsula for very many years, the lime obtained from it setting very fairly well under water, whether salt or fresh. It is not powerfully hydraulic, perhaps owing to the limited amount of magnesia present in the rock. The stone is readily recognised by its hardness and pale yellow colour. It is expensive to burn, as it requires firing for a much longer time, and with a more intense heat, than suffices to calcine the ordinary coral limestone to be found in the neighbourhood. Consequently the cost of this lime is fully four times as great as that of ordinary coral lime. For above-water work, however, it possesses many advantages over ordinary lime. It sets to an extreme hardness, and is susceptible to a high polish, while its natural straw colour remains in the plaster obtained from it. Probably, the stone may hereafter form a valuable item of export from the Jaffna Peninsula. It is possible, moreover, that by some chemical admixture the hydraulic properties possessed by the lime it yields may be materially increased, nor is it likely, that with the artificial Portland cement imported into this island at the present low rate, it would pay to attempt such experimenting on any commercial scale. Owing to the enormous competition in the manufacture of Portland cement by the Belgians and Dutch, the cement mills of England can now hardly be made to pay. The product of these, although decidedly superior in quality of that of their foreign competitors, has an enforced sale at prices which admit of export at an exceedingly low rate, and it is at least questionable whether any local production could compete with it in either price or quality. Nor can it be likely that such an exhaustion of raw materials for English cement-making can arise as to ever raise the price of it to a point at which we could expect successfully to compete except, perhaps, in localities where the cost of inland transport might reduce the balance. Chalk and clay, the two prime ingredients of the artificial Portland cement, are too plentiful throughout England to make it likely that the manufacture can ever become restricted for want of these two items. Here, in Ceylon, the first of these is wholly absent, while the second is not of the quality best suited for the production of cement. While, therefore, answering the question addressed to us to the best of our ability,

we should recommend the preference to be given to the best cements imported to the exclusion of any attempt to utilize local material. At the same time we should be glad to hear from correspondents who may be aware if the magnesia limestone we have mentioned, and which some believe, to be limited to the Jaffna Peninsula, is to be found elsewhere in the island.

THE AMSTERDAM CINCHONA TRADE IN THE FIRST HALF OF 1895.

June 20.

During the first half of 1895 five public sales of cinchona-bark have been held in Amsterdam, the following being the quantities of bark offered at them:—

	Jan 24	Feb 28	April 4	May 9	June 13
Bark which had been offered previously (packages)	2,431	3,282	3,051	1,319	2,287
New lots (packages)	5,335	4,906	2,755	4,563	3,401
Total	7,766	8,188	5,306	5,902	5,691
Average per cent sulphate of quinine	4·63	4·85	4·91	5·10	5·00

It will be seen that, out of a total of 33,353 packages, fully one third has been offered more than once—a circumstance which, although intrinsically of little importance, has contributed to intensify the already depressed condition of the market. The bark offered consisted of the following varieties:—

	Kilos
C Succirubra	101,635
C Ledgeriana	2,606,566
C Schuhkraft	2,207
C Officinalis	29,032
Hybrids, &c	310,747
	3,050,187

It deserves attention that druggists' barks of really fine quality are steadily becoming scarcer, the Government druggists' barks especially having fallen off greatly in respect to appearance. The richest parcel of bark offered during the half-year was one of 13 bales broken stem-quill of C Ledgeriana. It represented 13·05 per cent of sulphate of quinine. The average richness of the manufacturers' barks was 4·88 per cent. The total quantity of sulphate of quinine in the bark at the five first auctions of the last five years has been—

1895	1894	1893	1892	1801
kilos	kilos	kilos	kilos	kilos
143,237	96,158	98,809	77,849	56,609

The division of the bark by weight, according to the percentage of quinine represented by it, was—

Per cent	1-2	2-3	3-4	4-5	5-6
Kilos	23,985	235,612	594,77	897,514	742,235
Per cent	6-7	7-8	8-9	9·10	10 and over
Kilos	407,017	110,080	11,800	16,113	4,230

The following figures show the exports from Java u[illegible] the last four years in Amsterdan lb. (about half-kilo each);—

	1895	1894	1893	1892
January	657,000	893,000	900,000	370,000
February	756,000	458,000	355,000	433,000
March	449,000	522,000	626,000	360,000
April	615,000	515,000	679,000	350,000
May	402,700	900,000	714,000	490,000
January-May	2,879,700	3,288,000	3,244,000	2,012,000
June-December	—	8,917,700	7,342,000	6,532,000
Total	—	12,205,700	10,586,000	8,544,000

—*Chemist and Druggist.*

AN INVESTMENT IN TEA.

Mr. J. M. Murdoch left for Ratnapura today after spending a few days in Colombo. A year ago he purchased Carney estate, Ratnapura, and the object of his visit to Colombo this week was to dispose of a three-quarter share of that property to Mr. George Wilson, who came to the island on a globe-trotting trip two months ago and has been staying with Mr. Murdoch, and who leaves tonight for Bangkok by the "Oxus." Mr. Wilson hails from Dumfrieshire, and he was through Colombo some years ago. The price he has paid for the three-quarter share of Carney is £6,000. The estate comprises in all 204 acres; of which 142 are opened in tea, yielding 600 lb. to the acre. Six acres of the property formerly formed a part of Mr. W. G. Sandison's Asoka estate, and this portion is therefore producing seed-bearers—a fine paying little block. Mr. Murdoch will continue in sole charge of the estate.

THE WORK OF BACTERIA.

The investigations of bacteriologists during the past fifteen years have been of great benefit in the treatment of diseases and in explaining many operations and phenomena that were little understood. It has been discovered that the majority of the diseases which afflict man and animals are caused by bacteria. Bacteria are small plants, and represent the lowest form of organised life. They are invisible to the naked eye, and can only be studied by the aid of the most powerful microscopes. Twenty-five thousand of them placed side by side would not make a line more than an inch long. They consist simply of a single cell and multiply, not by the seed, but by each individual simply dividing itself into two or more. They are in the air, in the earth, on the clothing and body, in the mouth and nose, in fact everywhere, almost. We are indebted to these little plants for boils and abscesses, for fevers that exhaust our vitality, and the more deadly contagious diseases that decimate our population. They cause the dreaded tuberculosis in our cattle, cholera in our pigs, and glanders in our horses. And yet their work is not at all bad. While some are destroying others are building up. While some are working against us others are working with us. The bread we eat is made light and palatable by the work of some of these little plants; beer acquires its head from the same source. The delicate flavour so characteristic of good butter is mainly produced by the work of bacteria in decomposing the casein. They cause the souring of milk and the ripening of cream, which enables us to avoid heavy losses of butter-fat in the buttermilk.—*Mark Lane Express.*

INDIAN PATENTS.

Calcutta, 27th June 1895.

The fees prescribed have been paid for the continuance of exclusive privilege in respect of the undermentioned inventions for the periods shown against each:—

FOR IMPROVEMENTS IN STOVES OR AIR-HEATING APPARATUS.—24 of 1891.—Samuel Cleland Davidson of Sirocco Works, Belfast, Ireland, Merchant, for improvements in stoves or air-heating apparatus. (Form 15th July 1895 to 14th July 1896.)

Whereas the inventors of the undermentioned inventions have respectively failed to pay the fee within the time limited in that behalf it is hereby notified that the exclusive privilege of making, selling, and using the said inventions in British India, and of authorising others so to do, has ceased:—

FOR IMPROVEMENTS IN THE MEANS OR APPARATUS FOR DRIVING FANS FOR VENTILATING AND OTHER PURPOSES.—213 of 1890.—Mr. S. C. Davidson's invention for improvements in the means of apparatus for driving fans for ventilating and other purposes. (Specification filed 21st March 1891.)—*Indian Engineer.*

THE COFFEE ENTERPRISE IN MEXICO is evidently going to be an important one to judge by the intelligence quoted on our fourth page. Mexico has hitherto given a total export of about 200,000 cwt. of our old staple; but we may expect her to run up to the half-million and even the million cwt before many years are out.

THE UNITED PLANTERS' COMPANY OF CEYLON LIMITED.

REPORT, 1894.

The Directors now present to the Shareholders their fourth annual report, with the accompanying accounts to the 31st December, 1894, and are glad to be able to show continued satisfactory progress. With the rather finer system of plucking recently adopted, the yield of tea has been somewhat smaller than the previous year. This must, however, be partially attributed to the abnormally dry season in Ceylon, but slightly improved prices have compensated for the shortness of yield. During the year 129 acres of new land have been planted in tea, and are reported upon satisfactorily. The accounts now presented show a balance of profit of £6,823 19s. 8d., after paying an interim dividend at the rate of 5 per cent. per annum, all current expenses and upkeep of machinery and buildings, and after writing £2,000 off the Factories and Machinery account, £1,000 off the new clearings account, and making further provision for the Superintendents' Fund. The Directors now propose to add £1,000 to reserve account, bringing the amount of that account up to £5,000, to pay a final dividend of of 3½ per cent, free of Income Tax, making 6 per cent. for the year, and to carry forward a balance of £944 19s. 8d. The Directors have again to express their satisfaction with the energy and zeal displayed by the Superintendents in the management of the estates.

PLANTING AND PRODUCE.

Weights and Tares.—Referring to the growing tendency in Mincing Lane to do away with tares and allowances of very description, the *Grocer* says: "This has been shewn in the consideration of an alteration in the terms under which various articles of produce are being sold, proposed by importers, and which is receiving considerable opposition from the dealers. At present those proposals are, we believe, confined to coffee, cocoa, pepper, and sugar, though it is not at all unlikely that, if the proposed alterations were to be adopted, tea, various spices, and other articles would soon receive attention with a view to the abolition of draft allowances. At present it is not practicable to give the exact nature of the proposals, as we understand there is difference of opinion even among those by whom they are advanced. With reference to coffee, it will be remembered that on casks a draft varying from 1 lb. to 5 lb., acording to weight, is allowed, and on bags from 1 lb. to 4 lb. The allowance on sea damaged packges was in addition to these ordinary drafts, which therefore remain though the damage allowance is discontinued. In the opinion of some the remaining draft allowance is unreasonable because excessive, and it is even urged that such allowances are felt to be detrimental to the port of London, because shippers prefer to send their consignments to Continental ports, where it is stated, these allowances do not exist. Inquiries have, however, been made into the matter, and it has been found that though there is no draft generally allowed on the Continent or in the United States on Brazilian coffee, yet drafts similar to those of London are allowed in the case of East India and Central American, and all other coffee which forms the bulk of the trade of London. Seeing the loss which there is upon coffee from sampling (brokers' samples being very heavy), etc., it is not unreasonable to expect that there will be considerable opposition to any attempt to abolish the draft. With reference to cocoa, pepper and sugar, certain alterations in the present methods of weighing and taring are also suggested, whilst a strong protest is being made against what is considered an excessive amount of 'turn of the scale' which is recognised in the port of London. The advocates of the change urge that what they call the liberal terms which are now obtained by buyers from importers are having a detrimental effect on the trade of the port, and that shippers are sending their produce to ports where they have not to make such large allowances. Careful inquiry as to Continental customs, however, shows that many of the terms which prevail in London are similar to those of foreign ports. It has also been pointed out that trade in the port of London is more affected by steamship competition than by such questions as drafts and tares. Whatever be the explanation of the alleged falling off in the trade of the port, care must be taken that the buyers are not unjustly treated in order to assist the importers." —*H. and C. Mail.*

LOCAL NEW MANUFACTURING INDUSTRIES.

We had no idea that Messrs. Cave & Co. had got so far as "construction" of new instruments in what we supposed to be their Musical Instrument Repairing Department; but this is what we read with both surprise and satisfaction in their latest "Review":—

To test the skill of our staff we attempted the manufacture of a pianoforte. The result was most successful. The piano sold for a good price within a a few days of completion, and stands in excellent order. We have built a pipe organ with success. We have manufactured harmoniums, and for value in this line we challenge competition with English manufacturers. Our staff of Sinhalese mechanics connected with our pianoforte-repairing department is now very large. The head men have been with us for ten years or more. During this time they have worked under experienced European assistants and have become very proficient. Their work is always accurate and reliable.

Our picture-framing department has become very extensive, giving employment to a large number of hands. It is fitted with machinery and appliances enabling us to execute framing work, in the best possiblo style, expeditiously and economically. We hold large stocks of materials necessary for this class of work, including 30,000 feet of various kinds of moulding. With this large stock we are able to manufacture frames, suitable for the smallest miniature or the largest oil painting, in two hundred different patterns. We can also make photo-screens and frames of other materials than wood, such as plush, leather &c. as well as of any of the woods of Ceylon.

We have, ourselves, given considerable attention to the manufacture of golf clubs, which have been very readily appreciated by purchasers, and our increasing sales are an indication of our success in this matter. All material used in their manufacture is imported, and is of the finest quality. The timber both of heads and shafts is thoroughly seasoned, and the irons are of the best material and finest models procurable. We invite the comparison of these clubs with those of any other maker, for strength, finish, modelling, lay, driving power. The price, which is considerably lower than that of imported clubs, is a further recommendation.

These results in so many departments—reflect the highest credit on this enterprising Fort Firm and their staff and we would point out that nothing is more desirable in an agricultural country like Ceylon than the establishment of such manufacturing industries and nothing more deserving of encouragement at the hands of an intelligent, progressive Government. But what do we find? That most of the raw material used by Messrs. Cave & Co. is taxed at the Customs and this is also the case to a great extent with the extremely interesting new industries started by Messrs. Geo. Armitage & Co. In both cases, the tariff is decidedly discouraging although we pointed out at the time, how easily the necessary raw materials in these industries could be added to the free list, when a revision was made last year. Messrs. Cave & Co. furnish us with the following memorandum:—

All raw material has to bear duty. For Pianos, organs and harmoniums:—Wires, reeds, felts, leathers, celluloid, &c.; Framing:—Moulding, glass and boards for backs as well as cardboards for mounts. Golf Clubs, &c., all raw materials pay duty. We are making the last by the gross at a time. Our new Oil Engine is likely to be ready for work early next week; but how wrong that we have to pay 25 cents duty on every gallon of oil used for it.

We trust the time is fast approaching when Ceylon may have a far more enlightened Customs Tariff than the present one.

VARIOUS PLANTING NOTES.

CENTRAL TEA COMPANY OF CEYLON, LTD.—Under this title a new company has just been registered, with a capital of £45,000 in 10 shares. Object, to carry into effect a certain agreement, and to acquire certain tea estates in the island of Ceylon. The directors are J. S. Holmes, H. K. Rutherford, and W. H. Anderson. Qualification, £250. Remuneration to be fixed by the company. Registered office, 21, Mincing Lane, E.C.—*H. and C. Mail.*

VALUE OF PLANTATION PROPERTY IN COORG.—From the Travancore *Star* do we get the following interesting paragraph. Such estimates have seldom been made outside of Ceylon:—

The planters of Coorg have done a wise thing in trying to estimate the value of their industry. Being a first attempt, it cannot be viewed as more than an approximation to accuracy, but it goes far to show the magnitude of the interests involved, and for the reason will be found useful. According to this estimate European and Native Coffee Estates in Coorg represent a capital value of from £1,700,000 to £2,000,000, they circulate annually about £300,000 in upkeep and employ 50,000 labourers. Coorg is a small province and if it can show so large a stake, how much larger must that be of the Nilgiris and Malabar, the Shevaroys, the Pulnis and Travancore combined.

A CAMHPOR INDUSTRY.—We have seen nothing to discourage planters of camphor trees from anticipating a time when such trees should prove profitable yielders of the valuable product, or add considerably to the wealth of their properties. Cinchona trees in South America forests were very old in many cases; but marketable bark was also got freely from trees of five years and upwards.—Here is an account of the process of camphor extraction:—

After a tree is felled, the wood is cut into chips, which are placed in the rude boiler or still. This is provided with a false bottom, through which the steam rises, and as it passes through the wood it carries with it the camphor. The vapor is then conducted by the pipe to a condenser containing several partitions filled with cold water; in the sides of these partitions are apertures opening alternately, so that the vapor takes a circuitous route, and in the passage the camphor is deposited in crystals upon the bamboo screens. From these screens the crystals can be readily removed, and they provide an efficient means for draining off the oil. The process is an ancient one, but it is so firmly adhered to by the natives, and it suits the purpose so well that there appears to be a long future for it.

Experiments are likely to be made locally before long, and we shall publish the result, meantime collecting all useful information on the subject.

DEAFNESS. An essay describing a really genuine Cure for Deafness, Ringing in Ears, &c., no matter how severe or long-standing, will be sent post free.—Artificial Eardrums and similar appliances entirely superseded. Address THOMAS KEMPE, VICTORIA CHAMBERS, 19, SOUTHAMPTON BUILDINGS, HOLBORN, LONDON

AGAVE RIGIDA VAR. SISALANA.—We have at present planted out 14 large plants each about 5 to 5½ feet high, the largest leaf measuring 54 inches long by 4 inches broad; 36 smaller sized plants, 3 feet or under: 90 plants, 2 feet or less; 42 plants about 1 foot high and 95 plants about 6 inches high. These two last are waiting favourable opportunity to plant out. Altogether we have 277 plants and about 30 more suckers just beginning to show from the base of the old plants.—*Agri-Horticultural Society of Madras.*

CEYLON STAPLE EXPORTS.—The comparison for two half-years as shown in the Chamber of Commerce return, 1st Jan. to 1st July, is as follows:—

	1894.	1895.	Increase.
Tea, lb. ..	45,225,500	51,667,796	6,442,296
Coffee, cwt. ..	12,981	38,303	25,322
Cocoa, ,, ..	11,178	18,962	7,784
Cardamoms, lb.	163,761	213,742	49,981
Cinchona, ,,	1,029,998	498,973	531,025*
Cinnamon ,,	892,513	1,107,183	214,670
Coconut Oil, cwt.	189,243	143,629	45,614*
Plumbago, ,,	122,582	130,539	7,957
Dessicated Coconut, lb.	1,648,487	3,588,915	1,940,428

According to the Customs Department, the comparison for the same periods, is as follows:—

	1894.	1995.	Increase.
Tea, lb. ..	48,320.114	53,962,285	5,642,171
Coffee, cwt. ..	13,129	41,104	27,975
Cocoa, ,, ..	12,372	20,298	7,926
Cinchona, lb..	803,143	528,777	274,366*
Rice, (imported) bushels ..	3,184,117	3,572,992	388,875

* Decrease.

TROUT IN THE HORTON PLAINS.—Mr. Thomas Farr of Bogawantalawa has a letter in the local "Times" on this subject which is a little puzzling. He says no one has hitherto poached; but what is "fishing without a license" but poaching in a special degree? However, we are glad to learn that it is unlikely coolies or other natives interfere with the fish and the following information is interesting:—

"It may not be generally known that there are about ten miles of the Belihuloya on the Horton Plains, running at an elevation of from 6,600 feet to over 7,000 feet, of sufficient depth and volume to be eminently suitable for the well-being of trout, and every effort should be made to thoroughly stock the whole river. Funds will, I feel convinced, be readily available as soon as it becomes known that this splendid stream is to receive the attention it merits from the Trout Fund Committee. That the fish will breed it is, I should say, very probable, and the larger the number of fry introduced the greater will that probability become. Between fifty and sixty good fish have been taken out of the stream during the past six months, and very nearly all of these are from the 250 fry turned down by Mr. Fowler last year. Judging by the condition and growth of the fish, there seems to be abundance of food, in spite of the entire absence of any indigenous fish upon which they could prey. These fish, the so-called stone loach, so common in all other up-country streams, could easily be introduced, should the stock of trout become so large as to make this desirable."

It is not very likely, however, we repeat, that the present Trout Fund Committee will go on stocking Horton Plains stream if the subscribers are to be charged R5 per day for fishing, apart from their present or prospective contributions to the Fund, seeing it would be open to any outsider who gives nothing to said fund, to get on equal terms by a five-rupee license. Clearly the Committee must get full control from Government of all the streams it undertakes to stock and look after, and then one subscription-license-fee will be enough for fishing in any or all. As soon as this is arranged, we feel sure funds will flow in most liberally—but not before.

DRUG REPORT.

(From *Chemist and Druggist*)

THE AMSTERDAM CINCHONA-AUCTIONS.

June 13th.

Our Amsterdam correspondent telegraphing on Thursday night, states that at the cinchona-auctions held in that city 5,930 packages of Java cinchona were offered, of which only 3,474 sold at an average unit of 2·87c per half kilo, or about 9-16ths d. per lb., a decline of about 2 per cent on the auctions of May 9th, when the average was 2·92c. The result of the sale was a great disappointment to many holders, who had expected a slight advance. The approximate quantities of sulphate of quinine (in kilos) purchased by the principal buyers were as follows:—Philadelphia and Paris, 8,227; Brunswick, 984; Mannheim and Amsterdam, 461; Frankfort-on-Main and Stuttgart, 2,471; Auerbach, 1,791; Howards & Sons, 2,445. The range of prices for manufacturers' barks was from 1½c to 29c, for druggists' from 7½c to 75½c per half kilo. The general tone is dull and depressed.

———

London, July 4.

CAFFEINE—Very firmly held, and almost unobtainable on the spot—27s per lb being the nearest quotation. For delivery 21s to 22s per lb is asked.

ESSENTIAL OIL—Citronella oil is very firmly held at 1s 4d on the spot for fair native brands in tins or bottles, and 1s 4½d for ditto in drums. The prices for arrival are 1s 3d for tins, and 1s 3½d for drums, c i f terms—shipment within the next six months. Lemongrass oil rather scarce and firm at 1⅝d per oz on the spot and 1½d c i f terms. Bids in the last-named position slightly below the quoted price have been refused.

QUININE—Rather easier. Small sales have been made this week at 12⅝d per oz for HB brand, second-hand. B & S brand in the same position cannot easily be had below 12½d per oz.

INDIAN TEA SALES.

(From *Watson, Sibthorp & Co.'s Tea Report.*)

CALCUTTA, July 23rd, 1895.

14,857 packages changed hands in the sales held on the 18th instant. There was an active demand from various markets and prices for all grades, although somewhat irregular, were very firm with here and there an upward tendency, especially on the better grades. The demand for the Colonies and Bombay was stronger than it has been lately and kept suitable teas very steady.

The average price of the 14,857 packages sold is As. 8-0 or nearly 8½d per lb. as compared with 15,531 packages sold on the 19th July 1894 at As. 10-5 or about 10½d per lb. and 15,607 packages sold on the 20th July 1893 at As. 8-0 or about 9½d per lb.

The Exports from 1st May to 20th July from here to Great Britain are 22,968,603 lb. as compared with 19,426,878 lb. at the corresponding period last season and 17,162,847 lb. in 1893.

NOTE.—Last sale's average was As. 8-3 or about 8½d per lb.

EXCHANGE.—Document Bills, 6 months' sight, 1s 1-5-16d

FREIGHT.—Steamer £1-16-3 per ton of 50 c. ft.

(From *William Moran & Co.'s Market Report.*)

CALCUTTA, July 23rd, 1895.

TEA.—During the past fortnight there has been a rather better feeling in the market, and at both the weekly auctions, held on the 11th and 18th instants there was more spirit in the biddings. Good to fine teas have sold at firm prices, occasionally showing some slight advance. Medium sorts have been very steady, excepting good leaf pekoes without much liquor, which have gone a trifle easier. Common and ordinary sorts are, if anything, a shade higher.

The quality generally has been rather better, though the proportion of really good and fine teas has not been large. The quantity offered was 30,946 packages, of which 30,608 were sold.

TOTAL QUANTITY OF TEA PASSED THROUGH CALCUTTA FROM 1ST APRIL TO 21ST JULY.

	1895.	1894.	1893.
Great Britain	23,074,574	20,455,878	17,575,502
Foreign Europe	81,033	38,720	32,419
America	55,940	46,170	23,330
Asia	611,408	349,312	373,586
Australia and New Zealand	1,077,244	855,236	835,480
	24,900,199	21,745,316	18,840,317

VARIOUS PLANTING NOTES.

CAMPHOR is one of the articles which have of late been mounting up in price. From about 75s to 170s per cwt., such is the extent of the recent rise in the value of this article. For years past, it appears, a wholesale destruction of the camphor tree forests has been going on in order to obtain the product, and to such an extent have the depredations been carried that there was considerable danger of the tree a few years hence becoming completely extinct. With the object of preventing this it has been decided that in future the trees are not to be felled, but only bled, and as a consequence supplies are likely henceforth to be on a smaller scale. Already the imports have greatly decreased, only 3,355 tubs having been landed this year in comparison with 6,410 in the corresponding period; but consumption is likewise adapting itself to the restriction of supplies, the deliveries having fallen from 6,710 to 3,550 tubs, and so stock show very little alteration from a year ago, being now 4,015 tubs, compared with 4,585 in May last year.—*Dundee Advertiser.*

MOTH-CATCHING PLANT.—Read letter from Rev. G. Richter, dated Mercara, 22nd February, 1895 (at Agri-Horticultural Society, Madras,) forwarding a cutting from "Public Opinion" dated January 18th, of a Moth-catching plant and recommending the Society to introduce the plant:—

"This plant (*Arangia albens*), which is a native of Southern Africa, was introduced to New Zealand quite accidentally about seven years ago, and since then it has been extensively propagated there, on account of its effective service as a killer of destructive moths. Wherever the climate is mild the plant is an exceedingly free grower; it twines and climbs with great luxuriance, and produces immense numbers of white or pinkish flowers, which have a very agreeable scent. These flowers attract innumerable moths. On a summer evening a hedge of arangias will be covered by a perfect cloud of moths, and in the morning there will not be a single flower that does not imprison one or two, and sometimes as many as four insects of various sizes and genera. The action of the araugia is purely mechanical. The calyx of the flower is rather deep, and the receptacle for its sweet juices is placed at its base. Attracted by the powerful scent and the prospect of honey, the moth dives down the calyx, and protrudes its proboscis to reach the tempting food. But before it can do so the proboscis is nipped between two strong, hard black pincers, which guard the passage and once nipped there is no escape for the moth, which is held as in a vice, by the extreme end of the proboscis, and dies miserably. The *rationale* of the process is not yet explained. A plant of araugia, covering a space of ten yards in length will destroy many hundred moths every night, and consequently prevent the ravages of fifty times as many larvæ. It is however, a singular fact that in New Zealand, where the plant has often been cultivated for the express purpose of destroying the detested codlin moth (*Carpoapsa pomenalla*), that wily insect declines to enter the trap.—*Detroit Free Press.*

THE BEST SOAPS FOR WARM CLIMATES are CALVERT'S TOILET SOAP (6d. Tablets) and PRICKLY-HEAT SOAP (6d. and 1s. bars), pleasantly perfumed, for Bath or Toilet, containing 10 per cent. of Pure Carbolic. Very serviceable as preventatives of Prickly-heat and other skin irritation. Sold at Chemists, Stores, &c.
F. C. CALVERT & CO., MANCHESTER.

COLOMBO PRICE CURRENT.

(Furnished by the Chamber of Commerce).

Colombo, July 29, 1895.

EXCHANGE ON LONDON.—*Bank Selling Rates*:—On demand 1/1 1-16; 4 months' sight 1/1 3-32; 6 months' sight 1/1¼. *Bank Buying Rates*:—Credits 3 months' sight 1/1 7-32; 6 months' sight 1/1¼. Documents 3 months' sight 1/1¼: 6 months' sight 1/1 9-32.—Closing rates.

COFFEE.—Plantation Estate Parchment on the spot per bushel, R16·00 to R16·50. Estate Crops in Parchment, delivery per bushel,—No quotations. Plantation Estate Coffee, f.o.b. on the spot per cwt, R83·00 to R85·00. Plantation Estate Coffee f.o.b. Special Assortment per cwt,—No quotations. Liberian parchment on the spot per bushel, R12·50. Garden and Chetty Parchment on the spot per bushel,—None offering. Garden and Chetty Coffee f.o.b. per cwt,—No quotations. Native Coffee f.o.b. per cwt, R75·00.—Asked.

TEA.—Average Prices ruling during the week: Broken Pekoe, per lb 59c. Pekoe per lb 50c. Pekoe Souchong, per lb 37c. Broken mixed and Dust, per lb 27c.—Averages of Wednesday's sale.

CINCHONA BARK.—Per unit of Sulphate of Quinine per lb 01½c. to 3c.—1 to 4 % nominal. Twigs and Branch.—No quotations.

CARDAMOMS.—per lb 90c. to R1·90.

COCONUT OIL.—Mill oil per cwt, R15·62 to R16·00.—Asked. Dealer's oil per cwt.—Asked. Coconut oil in ordinary packages f.o.b. per ton, R347·50 to R352·50.

COCOA.—(Unpicked and undried) per cwt, R30 to R40.

COPRA.—Per candy of 560 lb R42·00 to R48·50.

COCONUT CAKE.—(Poonac) f.o.b. per ton, R50 to R60.00.—Nominal.

COIR YARN.—Nos. 1 to 8 per cwt, R6·00 to R15·00.

CINNAMON.—Nos. 1 and 2 only per lb 57½c. Ordinary Assortment. per lb 53½c. to 54c.

PLUMBAGO Firm:—Large Lumps per ton, R150 to R330. Ordinary Lumps per ton, R130 to R290. Chips per ton, R80 to R150. Dust per ton, R30 to 100.

EBONY.—Per ton.—Govt. sales in August.

RICE.—Soolye per bag, R6·75 to R7·90.
Pegu and Calcutta Calunda per bag R6·87 to R7·75.
Coast Calunda per bushel, R3·05 to R3·20.
Muttusamba per bushel, R3·25 to R3·62.
Kadappa and Kurnwe per bushel,—No quotations.
Rangoon Raw 3 bushel, bag, R10·50 to R10·62.

FREIGHTS.

Cargo.	Per ton London per str. s. d.	N. York per str. s. d.	Trieste per str. s. d.	Mar'lles per str. R. c.	Hamb', Bremen &c. s. d.
Tea	25/	..	25/	25	22/6
Coconut Oil	25/	..	25/	25	22/6
Plumbago	22/6	..	25/	25	22/6
Coconuts in bags	25/	..	25/	25	22/6
Other Cargo	25/	..	25/	25	22/6
Broken Stowage	12/6	..	..	..	..
SAILERS.					
Coconut Oil	..	32/6	..	..	..
Plumbago	..	32/6	..	..	..

New York rates per steamer with transhipment 12/6 @ 15/ above London rates.

LOCAL MARKET.

By Mr. A. M. Chittambalam, 7, Baillie St., Fort.

Colombo, July 31st, 1895.

Garden Parchment :—	R15·00 to 15·25	per bushel.
Chetty do :—	15·50 to 16·00	do
Native Coffee :—	65·00 to 66·00	per cwt.
do f.o.b. :—	72·00 to 73·00	
Liberian Parchment,	13·00	per bushel (nominal).
do Coffee,	67·00	per cwt.
CARDAMOMS.—	0·70 to 2·00	per lb. (nominal).
COCOA.—(nominal)	22·00 to 35·00	per cwt. do
RICE.—Market is quiet :—		
Kazla	R6·40 to 6·50	per bag.
Soolye	6·75 to 7·25	do
Callunda	7·00 to 7·37	
Coast Callunda	2·75 to 2·90	per bushel.
Kuruve (Scarce)		
Muttus amba	3·15 to 3·40	do

CINNAMON.—Quoted Nos. 1 to 4, at 53c and Nos. 1 and 2 at 56 cents per lb. (nominal).
CHIPS.—R55·00 per candy (nominal).

COCONUTS.—Ordinary	R35·00 to 38·00	per 1,000 (nominal).
do Selected	42·00 to 45·00	do do
COCONUT OIL.—	15·75 to 16·00	per cwt. do
COPRA.—Market quiet :—		
Kalpitiya	R47·00 to 48·00	per candy.
Marawila	46·00 to 46·50	do
Cart Copra	40·00 to 45·00	do
POONAC.—Gingelly	100·00 to 105·00	per ton.
Chekku	75·00 to 80·00	do
Mill (retail)	55·00 to 57·50	do
EBONY.—quotations at	R100 to R185	(nominal).
SATINWOOD.—cubic feet	1·50 to 2·12	do
HALMILLA.— do	1·00 to 1·25	do
KITUL FIBRE.—Quoted at	R30·00	per cwt. (nominal).
PALMYRA FIBRE.—Quoted nominally :—No buyers.		
Jaffna Black.—Cleaned	R15·00 to 17·00	per cwt.
do Mixed	10·00 to 13·00	do
Indian do	7·00 to 9·00	do
Do Cleaned	10·00 to 14·00	
SAPAN WOOD.—Quoted.	55·00 to 60·00	per ton.
KEROSINE OIL—American	7·00 to 7·12	Per case.
do Russian	6·25 to 6·30	Per case.
KAPOK.—Cleaned f. o.b :—	26·00 to 27·50	(nominal.)
do Uncleaned	5·00 to 5·50	do
Croton Seed	13·00 to 17·00	do
Nux. Vomica	2·50 to 3·00	per cwt.

CEYLON EXPORTS AND DISTRIBUTION 1895.

COUNTRIES.	Coffee cwt. Plantation	Coffee cwt. N'tive	Coffee cwt. Total.	Cinchona. 1895 B'nch & Trunk lb	Tea 1895 lb.	Cocoa cwt	C'moms lb.	Cinnamon. Bales lb.	Cinnamon. Chips lb.	Coconut Oil. 1895 cwt.	Coconut Oil. 1894 cwt.	P'bgo 1895 cwt.
To United Kingdom ..	32128	36	32164	413802	53935401	18075	141506	439155	187376	62686	106926	52348
,, Austria	3056	100	3156	..	2350	100	..	1000	5600	10075	13633	..
,, Belgium	24	..	24	78484	4206	542	..	27000	16500	2700	8321	6416
,, France	614	509	1123	7900	24036	373	..	3500	2800	..	483	228
,, Germany	445	..	445	..	148251	510	36721	156815	129640	10236	18322	23332
,, Holland	..	..	..	20474	10781	..	..	..	..	..	..	4069
,, Italy	..	..	..	21647	4773	50	..	37500	40880	401	4525	..
,, Russia	152	..	152	..	146418	..	..	..	..	..	906	..
,, Spain	..	..	..	..	29675	45	..	101000	1120	..	99	..
,, Sweden	..	..	..	..	750	..	..	..	..	..	..	..
,, Turkey	..	..	..	..	5517	..	..	..	..	..	..	..
,, India	468	872	1340	..	542127	2	46262	1100	50	1567	18808	309
,, Australia	5014	631	5645	..	5658884	52	112	2800	8776	1818	1327	663
,, America	536	..	536	..	232751	741	5772	20000	22400	65520	65548	50418
,, Africa	..	..	..	..	62767	..	..	..	..	..	..	..
,, China	79	..	79	..	141520	33	..	26600	..	265	1579	..
,, Singapore	1	..	1	..	16882	..	..	..	..	5494	3208	..
,, Mauritius	354	454	808	896	92231	..	..	..	..	..	..	..
,, Malta	..	..	..	..	43295	..	..	..	..	..	..	..
Total exports from 1st Jan. to 29th July 1895	42871	2602	45473	543203	61102615	20523	230373	815470	415142	160262		137783
do 1894	15786	465	16251	1619007	52046376	12954	182723	800501	296463	243685		163099
do 1893	36985	1735	38720	2513485	50291164	23245	223991	842396	314168	187233		229280
do 1892	28786	1841	30627	3863624	46851226	13853	219440	953661	305924	295580		251029

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From S. Figgis & Co.'s Fortnightly Price Current, London, 3rd July 1895).

EAST INDIA. Bombay, Ceylon, Madras Coast and Zauzibar.	QUALITY.	QUOTATIONS.
ALOES, Socotrine	Good and fine dry liver...	£3 10s a £5
Zanzibar & Hepatic	Common and good ...	30s a 80s
BARK, CINCHONA Crown	Renewed	2d a 4½d
	Original stem	1½d a 3d
Red ...	Renewed	1d a 4d
	Chips and shavings ...	1d a 4d
BEES' WAX, White ...	Sli. sof. to gd. hard brig.	£7 10s a £8
Yellow ...	Dark to fair	£6 a £7
Mauritius & Madagascar...	Fair to fine	£6 12s 6 a £7 5s
CARDAMOMS—		
Allepee	Fair to fine clipped ..	1s a 2s 6d
Mangalore	Bold, bright, fair to fine...	1s 10d a 2s 8d
Malabar	Clipped, bold, bright fine	1s 8d a 2s 3d
Ceylon	Middling. stalky & lean	1s 3d a 1s 6d
Tellicherry	Good to fine	1s 6d a 1s 8d
	Brownish	9s a 1s 4d
Mysore	Fair to fine pmp. clipd.	1s 9d a 4s 2d
	,, ,, small ...	1s 2d a 1s 5d
Long Ceylon ...	Shelly to good	1s 1d a 2s 11d
	Seeds ...	1s 11d a 2s 1d
CASTOR OIL, 1sts	White	2¾d a 3d
2nds	Fair and good pale ...	2¼d a 2½d
CHILLIES, Zanzibar ...	Fair to fine bright ..	27s a 30s
	Ord'y. and middling ...	24s a 27s
CINNAMON, 1sts	Ord'y. to fine quill ...	8½d a 1s 4d
2nds	,, ,, ,, ,, ...	8¼d a 1s 3d
3rds	,, ,, ,, ,, ...	7½d a 1s
4ths & 5ths	Woody and hard ..	7d a 9d
Chips	Good ordinary ..	2⅞d
CLOVES, Zanzibar and Pemba.	Fair to fine bright ...	3d a 3½d
	Common dull and mixed	2¾d a 3d
,, STEMS	Common to good ...	1d
COCULUS INDICUS ...	Fair sifted...	8s a 12s
COFFEE	Bold to fine bold colory	108s a 115s
	Midding to fine mid ..	101s a 117s
	Low mid and low grown	93s a 100s
COLOMBO ROOT... ...	Good to fine bright sound	10s a 20s
	Ordinary & middling ...	7s a 8s
CROTON SEEDS, sifted...	Ordinary to fine fresh ...	28s a 31s
CUTCH	Fair to fine dry ...	20s a 32s
DRAGONS BLOOD, Zan.	Ordinary to good drop ...	20s a 50s
GALLS, Bussorah & Turkey	Fair to fine dark blue ...	47s a 50s
	Good white and green ..	35s a 40s
GINGER, Calicut, Cut A	Good to fine bold ..	67s a 76s 6d
B & C	Small and medium ..	60s a 65s
Cochin Rough...	Common to fine bold ...	34s a 36s
,, ...	Small and D's ...	32s a 33s
Bengal Rough,	Fair to good ...	22s 6d a 25s
GUM AMMONIACUM ...	Blocky to fine clean ...	20s a 50s
ANIMI, washed ...	Picked fine pale in sorts	£9 a £11 10s
	Part yellow & mixed do.	£8 10s a £8 15s
	Bean & Pea size ditto ..	£4 a £7 10s
	Amber and red bold ..	£5 a £7
scraped...	Medium & bold sorts ..	£4 a £7
ARABIC E.I. & Aden...	Good to fine pale frosted sifted	40s a 42s 6d
	Sorts, dull red to fair ...	30s a 37s 6d
Ghatti ...	Good to fine pale selected	32s 6d a 45s
	Sorts middling to good	23s a 30s
Amrad cha.	Good and fine pale ...	35s a 45s
	Reddish to pale brown ...	25s a 32s
Madras ...	Dark to fine pale ...	20s a 35s
ASSAFŒTIDA	Fair to fine pinky block... and drop	40s a 100s
	Ordinary stony to midlin	30s a 45s
KINO	Fair to fine bright ..	£25 a £30
MYRRH, picked	Fair to fine pale ...	£5 a £7
Aden sorts	Middling to good ..	65s a 75s
OLIBANUM, drop...	Fair to fine white ...	30s a 55s
,,	Reddish to middling ...	17s a 25s
pickings...	Middling to good pale ...	8s a 14s
siftings ..	Slightly foul to fine ..	9s a 13s
INDIARUBBER	Red hard clean ball ...	2s 1d a 2s 5d
East African Ports, Zanzibar and Mozambique Coast	White softish ditto ...	1s 8d a 2s 2d
	Unripe root	10d a 1s 4d
	Liver and Lamu Ball ...	1s 8d a 2s 2½d
	Sausage, ordinary to fine	1s 3d a 2s
	" without sticks	2s 2d a 2s 5d
Assam, ...	Good to fine ...	1s 7d a 2s
	Common foul & middling	9d a 1s 5d
Rangoon	Fair to good clean ...	1s 6d a 2s 2d
Madagascar, Tamatave, Majunga and Nossibe	Good to fine pinky & white	2s 1d a 2s 5d
	Fair to good black ...	1s 6d a 1s 9d
ISINGLASS or FISH MAWS Tongue.	good to fine pale ...	1s 8d a 2s 6d
	dark to fair ...	9d a 1s 4d
Bladder Pipe	Clean thin to fine bold...	1s 6d a 2s 6d
Purse ...	Dark mixed to fine pale...	1d a 1s 2d

EAST INDIA *Continued* East Coast Africa, Malabar and Madras Coast, Bengal.	QUALITY,	QUOTATIONS.
Kurrachee Leaf ...	Good and fine pale	2s 1d a 3s
	Red part thin ..	1s 2d a 1s 11d
INDIGO Bengal	Middling to fine violet...	4s 6d a 5s 6d
	Ordinary to middling ...	3s 2d a 4s 3d
Kurpah	Fair to good reddish violet	2s 8d a 3s 6d
	Ordinary and middling	1s 9d a 2s 6d
Madras (Dry Leaf)	Middling to good ...	1s 8d a 2s 10d
	Low to ordinary ...	7d a 1s 6d
IVORY—Elephants' Teeth		
60 lb & upwards ...	Soft sound	£59 a £66
over 30 & under 60 lb	,, ,,	£48 10s a £61
60 a 100 lb. ...	Hard ,, ,,	£35 a £42
Scrivelloes	Soft ,, close & wide	£22 a £35 10s
Billiard Ball Pieces 2⅝ a 3¼in	Sound soft	£80 a £97
Bagatelle Points ...	Sli. def. to fine sound soft	£51 a £63
Cut Points for Balls ...	Shaky to fine solid sd. sft	£65 a £78
Mixed Points & Tips...	Defective, part hard ...	£33 a £44
Cut Hollows	Thin to thick to sd. sft	£25 a £41
Sea Horse Teeth — ... ¾ a 1¼ lb.	Straight crked part close	1s a 3s 6d
MYRABOLANES, Bombay	Bhimlies I, good & fine pale	7s 9d
	,, II, fair pickings	3s 6d a 4s 3d
	Jubblepore I, good & fine pale	6s a 7s
	,, II, fair rejections	3s 6d a 4s 6d
	Vingorlas. good and fine	4s a 5s 6d
Madras, Upper Godavery	Good to fine picked ...	5s 6d a 6s 6d
,, ,, ..	Common to middling ...	3s 3d a 4s 6d
Coast	Fair	4s 4d a 4s 6d
Pickings ...	Burnt and defective ...	3s 3d a 4s
MACE, Bombay ...	Dark to good bold pale ..	1s 6d a 2s
	W'd com. dark to fine bold	4d a 6d
NUTMEGS, ,, ...	65's a 81's	1s 11d a 2s 10d
	90's a 125's	1s 3d a 1s 10d
NUX VOMICA	Fair to good bold fresh	6s a 9s
OIL, CINNAMON ...	Good heavy	3¾d a 1s 6d
CITRONELLE ...	Bright & good flavour...	⅞d a 1d
LEMONGRASS ...	,, ,, ,, ...	[illegible]s ⅝d
ORCHELLA WEED Ceylon ...	Mid. to fine, not woody	11s a 15s
Zanzibar	Picked clean flat leaf ...	12s a 18s
Mozambique	,, wiry	22s a 32s
PEPPER—		
Malabar, Black sifted ...	Fair to bold heavy ..	2⅜d a 2½d
Alleppee & Cochin ..	,, good ,, ...	1⅞d a 2⅛d
Tellicherry, Black ...	,, ,, .. nom.	3½d
PLUMBAGO, Lump ...	Fair to fine bright bold	15s a 16s
	Middling to good small	10s a 13s
Chips ...	Dull to fine bright	1s 6s a 8s 6d
Dust ...	Ordinary to fine bright...	2s a 6s
RED WOOD	Fair and fine bold ...	£3 10s a £4
SAFFLOWER, Bengal	Good to fine pinky nominal	95s a 100s
	Ordinary to fair ...	70s a 80s
	Inferior and pickings ...	30s a 50s
SANDAL WOOD, Logs	Fair to good flavour ...	£30 a £50
,, ,, Chips..	Inferior to fine ...	£4 a £8
SEEDLAC	Ordinary to fine bright	50s a 10s
SENNA, Tinnevelly ..	Good to fine bold green	6d a 8d
	Fair middling medium	3d a 5½d
	Common dark and small	½d a 2d
Bombay ...	Ordinary to good ...	1d a 2d
SHELLS, M.-o'-P. ...	EGYPTIAN—bold clean...	50s a 55s
	medium thin and stout	70s a 77s 6d
	chicken, part oysters	[illegible]s 6d a 77s 6d
large	BOMBAY—poor to fine thin	[illegible]7s 6d a 6[illegible]s 6d
medium part stout	clean part good color	75s a 90s
chicken part stout	,, ,, ,,	85s a 90s
oyster & broken pcs	,, ,, ,,	77s 6d a 8[illegible]s 6d
Mussel	medium and bold sorts	40s a 50s
	small and medium sorts	18s a 34s
Lingah Ceylon .	Thin and good stout sorts	9s a 20s
TAMARINDS	Mid. to fine black not stony	9s a 11s
	Stony and inferior ...	4s a 6s
TORTOISE-SHELL ...	Sorts, good mottle, heavy	28s a 38s
Zanzibar and Bombay	Pickings thin to heavy...	9s 6d a 21s 6d
TURMERIC, Bengal ...	Leanish to fine plump finger ...	9s 6d a 11s 6d
Madras ...	Fin. fair to fine bold brgt	10s 6d a 12s 6d
,, ...	Mixed middling	10s
,, ...	Bulbs	9s 9d a 10s
Cochin ...	Finger	9s a 11s
VANILLOES,		
Bourbon, 1sts ...	Fine, cryst'ed 5 to 9 in.	16s a 25s
Mauritius, 2nds...	Foxy & reddish 5 to 8 in.	12s a 18s
Seychelles, 3rds...	Lean & dry to mid. under 6 in. ...	7s a 10s
Madagascar, 4ths...	Low, foxy, inferior and pickings	5s 8

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for August:

Vol. VII.] AUGUST, 1895. [No. 2.

DAIRYING.

A DAIRY, as the term is commonly understood, is an establishment where cattle are kept for the production of milk, either for sale or for the manufacture of butter and cheese. As dairying is carried on in Colombo, the cattle kept may either be the property of the nominal proprietor of the establishment or not. Where they do not belong to the proprietor a contract of some kind is entered in to between him and the real owner of the cows. Commonly, the owner or owners of the animals agree to defray the cost of feeding them, and also to pay the coolies who attend on the cattle, on condition that all the milk produced should be purchased by the proprietor at a uniform rate of say 12 cents per "bottle" of 26 oz. On the other hand, the so-called proprietor sells the milk to his customers at from 18 to 20 cents per bottle. If strict supervision be carried out, especially during milking hours, the system would not be so objectionable, but as a rule this method of dairy is adopted by those who are employed at other work, with the result that the proprietor exercises little or no control over the establishment, and while its sanitary arrangements are neglected, there is generally ample scope for the adulteration of milk, and wilful carelessness in the matter of dieting, with which, indeed, from his position, the proprietor has little right to interfere. To the proprietor himself the system is at least temporarily remunerative, for without any expenditure of capital on his part, he secures a fair return for his enterprise.

In the system where the cattle kept in the dairy are the property of the proprietor, the most frequent cause of failure is the want of system in management, due to a deficiency in technical knowledge, the result of which is that while at one time the dairy is found to be in a flourishing condition, with a large output of milk which is readily disposed of, at another the dairy man has a large number of dry cattle thrown on his hands, and finds that the cost of feeding the stock greatly exceeds the value of the milk sold. No dairy of any dimensions should be without a stock-bull, and if the services of this animal are judiciously made use of, and the calving of the cows carefully regulated, one of the chief causes of failure in this connection will be prevented.

One modification of the system, according to which the proprietor is the owner of the dairy stock, is the plan of immediately disposing of the cows as they go dry and purchasing fresh animals to replace those sold. In many ways, especially from a financial point of view, this is an admirable plan, but it has its drawbacks in that the dairyman will be selling and buying stock all through the year, that these sales and purchases will be regulated by market rates which he is of course not in a position to control, that he will be constantly running the risk of importing disease into his dairy, that there may not always be a supply of cattle to meet his requirements, that the dairyman forfeits the future advantage of securing a select herd of cows by breeding.

It is manifestly injudicious for any owner of stock to dispose of a cow which is a good milker and a regular breeder, because it has to be fed while

it yields no milk for the time between its going dry and coming into milk again; and it would be equally unwise for a dairyman to retain animals that do not combine the above qualities, and continue to feed them with the prospect of their coming into milk again at some time, and yielding the owner supplies that are below the average.

The object of every dairyman should be to put together as satisfactory a herd of milking cows as can be had, and when he has got them to keep them as long as he can with advantage to himself. It is, of course, not possible to do this all at once, but it can be done gradually. All animals in the first selected herd which have turned out to be poor milkers or irregular breeders should be got rid of; and such cows as in course of time may become unthrifty or old, should be weeded out. But let the good animals be retained, a good stock-bull kept, and good progeny for the future use of the dairy secured, and the stock so managed that a uniform supply of milk will be always kept up. Here we have an ideal system of dairying or rather dairy farming. The advantages—financial and otherwise—of such a system cannot correctly be guaged till at least the fourth year of its working, by which time the heifers bred on the farm will have begun to supply the places of their dams, after which there should be little if any expenditure of capital on account of stock purchased Under these conditions the sale of the bull calves born on the farm will be an important item of revenue. The management of a dairy worked on this system, in addition to securing financial success, will combine all the pleasure that can be desired by a cattle-fancier in the complete control he could exercise over his herd, and the opportunity afforded him of applying his technical knowledge of stock to the best advantage, and seeing results work out to his satisfaction.

OCCASIONAL NOTES.

The amount realized by the sale of stock held at the Government Dairy on the 12th July was R1,262·00. The twelve cows fetched R787, or an average of R65·58. Of these fifteen, five were Sind cows which realized R533·00, or an average of R106·60. The calves (fourteen in number) fetched R475·00, or an average of R34·00. Of these nine were Sind bull calves which reailzed R421, or an average of R46·77. The different purchasers were Messrs. S. C. Obeyesekere, F. Schrader, Drs. Rockwood and Stork, Messrs. Jacob de Mel, Rodrigo, Farquharson, Maricar, Robson, Juanis, Buckworth, and J. W. Vanderstraaten. On the whole the sale may be considered a very satisfactory one.

Of late there has been some discussion in the press as to the relative merits of the Guzerati and Sind breeds of cattle. Without taking any sides in this discussion, we should wish to state that the Sind breed of cattle have been given a good trial in the Government Dairy and have not been found wanting. To the Government Dairy authorities is due the credit of having selected the breed for the purposes of the dairy and so introduced them into the Island, and to the notice of the Ceylon public. By the sales which are periodically held in the dairy, the public are given an opportunity of securing animals of a superior type for improving the breeds of cattle already existing in the Island. Before very long the influence of Sind cattle upon the indigenous breed should be marked.

We would draw attention to the specially interesting paper on Contagious Diseases in Insects, by Professor Woodworth of the State University, which we have taken over from the official organ of the Department of Agriculture of the Cape Colony. The question of how to get rid of our plant pests is always an important one to the agriculturist, and any contribution that shows the way to solving it in some measure, is always welcome.

An editorial note in the *Indian Agriculturist* again reminds us how much in need we are of stock inspectors in the Island—for the matter of that in Colombo—to carry on work that, from being distributed among a number of irresponsible parties, is imperfectly done or altogether neglected. The suggestions made by Mr. William Smith in his notes on "Murrain" which appeared in the pages of the Magazine a little time ago, should surely have carried weight as coming from one who is not lacking in local experience, or knowledge of stock, and is a veterinary surgeon to boot. Veterinary Science—at least in its relation to cattle—has up till now been in that state which has been suggestively described as "marking time."

Here is how the *Indian Agriculturist* refers to this subject:—In a country like India, whose interests are almost entirely agricultural, the importance of a training college for veterinary assistants is too obvious to need demonstration. Agricultural stock is the standby of the cultivator all over the country, and not only in those districts where stock-rasing is undertaken as a regular and independent pursuit. The necessity, then, is clear of having a body of men distributed throughout the country sufficiently acquainted with the principles of the morbid pathology of animals to detect and report special outbreaks of serious disease in due time. Experts are not wanted, and could not be supported, except at a few more important centres. But there is, we believe, an opening for youths who have attended a veterinary college long enough to advise stock owners as to the precautionary measures that should be taken to protect their animals against contagious and infectious diseases, to superintend the inland trade in cattle, to treat ordinary animal ailments, to take charge of public veterinary dispensaries or private stud farms, and to collect information upon veterinary subjects generally for the public benefit. A great cry is periodically raised about the degeneration of the live stock of the country, and unfortunately it is too seriously warranted by the facts. It is difficult to see how any permanent improvement can take place, or even how the process of degeneration is to be arrested, unless more attention is paid to animals and the conditions under which they thrive. Like everything else, live stock needs study, and its importance in the economy of Indian life is surely a strong reason for the bestowal of pains upon it.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING JULY, 1895.

1 ..	·13	13 ..	Nil	25 ..	·01
2 ..	·01	14 ..	·01	26 ..	·01
3 ..	Nil	15 ..	·04	27 ..	Nil
4 ..	Nil	16 ..	Nil	28 ..	Nil
5 ..	Nil	17 ..	Nil	29 ..	Nil
6 ..	Nil	18 ..	Nil	30 ..	Nil
7 ..	Nil	19 ..	Nil	31 ..	Nil
8 ..	Nil	20 ..	Nil	1 ..	Nil
9 ..	Nil	21 ..	·07		
10 ..	Nil	22 ..	Nil	Total ..	·84
11 ..	Nil	23 ..	·23		
12 ..	·24	24 ..	·22	Mean ..	·027

Greatest amount of rainfall in any 24 hours on the 12th instant, ·24 inches.

Recorded by P. VAN DE BONA.

LAWS OF CEYLON RELATING TO AGRICULTURE.

CHAPTER VII.—(*Contd.*)

7. The Governor in Executive Council may call upon the Central Board to report on similar works.

8. On receipt of such report and estimate the Governor, with the advice of the Executive Council, may ask the Legislative Council for a money vote.

9. The Central Irrigation Board shall cause the specific works in aid of which money shall have been voted to be undertaken and executed by the Provincial Irrigation Board of the province in which such works have to be constructed ; the sum voted shall be expended upon such specific work exclusively, and for no other purpose. Provided that any unexpended balances may be reserved so that the same may be applied in reduction of the amount which the Legislative Council may be asked to vote for other specific works.

10. (1.) The cost of irrigation works shall be a first charge on allotments of land benefited thereby, except in case of exemptions by the Central Irrigation Board.

(2.) The Government Agent shall have power to alter and amend the specification from time to time, and to enlarge it as additional lands may be benefited.

(3.) Such specification shall be conclusive on the point that the several allotments of land mentioned in it are liable for the repayment of the said cost, which shall be a first charge on the allotments, and shall take precedence over all mortages, hypothecations and encumbrances whatsoever.

(4.) Every specification prepared under this chapter and all amendments and alterations of the same shall from time to time be published in the *Government Gazette.*

11. Such charge shall extend as respects each allotment to the proportion due from each allotment as assessed under the provisions of this Ordinance, and shall be recovered in the manner provided in Chap. IX. of this Ordinance.

12. The Provincial Irrigation Board shall cause all irrigation works to be executed, the option being left to the proprietors to perform the necessary earthworks at their own expense, unless such proprietors shall have been specially exempted. Provided that the officer in charge of the work shall cause the earthworks to be otherwise performed if the proprietors fail to perform the work when required to do so, or perform the same unsatisfactorily.

13. If land be wanted for keeping watercourses and channels free from obstruction, or for the construction or repair of any irrigation work, and there is any hindrance to its acquisition, the Governor may declare that the land is needed for public purposes, and order the land to be bought by Government according to the laws now or hereafter to be in force for the acquisition of land for public purposes. The sum paid for the land shall be included in the cost of the work, to be recovered as hereinafter provided.

H. A. J.

(*To be continued.*)

BAZAAR DRUGS IN VETERINARY PRACTICE.

Arsenic.—White arsenic or arsenious acid is often sold in the native drug bazaars under the name of S. *Sudu pasanam* or Tamil *Vella pásánam.* White arsenic is prepared by heating arsenical iron ores, it is either met with in the shape of a white powder or porcelain-like pieces. When a small quantity of the powdered arsenic is heated in a glass tube, the vapour which escapes cools on the sides of the glass in the form of minute crystals. Arsenious acid dissolves in water very sparingly, generally about 1-100, but in the presence of an acid or an alkali, it dissolves more easily. Arsenious acid is an irritant poison and is used medicinally only in very small doses. Animals often tolerate this drug to a great degree, but this toleration depends on their respective humours,—if the term may be used,—for cases are on record, where even dram doses of arsenic administered daily have not affected animals, and in other instances twenty grains have often killed an animal. It is a cumulative poison, as even small doses of the drug repeatedly given have known suddenly to develop serious symptoms resulting in the death of animals.

Arsenic in medicinal doses acts beneficially in the stomach by promoting appetite and increasing the functions of the organ. It readily enters the blood and even all the tissues and organs, but is as readily expelled. The drug increases the tissue changes and acts as a valuable alterative and tonic. It is useful in chronic rheumatism, nervous diseases such as epilepsy and paralysis, also in chorea in the dog. By increasing the tissue changes it acts beneficially in mange and other skin diseases by tending to cast off the scaly diseased portion of the skin. Externally arsenic is an irritant, caustic and an antiseptic. It is useful in troublesome skin diseases when applied in the form of a paste contisting of one of arsenic to five of charcoal and ten of lard. But this must be used with great caution, as any abraded surface of the skin would cause absorbtion of the substance into the system with serious results. In treating scab

in sheep, arsenic is the chief ingredient in the dipping mixture; a very useful dipping mixture is prepared by taking eight ounces each of arsenious acid and carbonate of potassium, six ounces each of soap and sulphur, and boiling the whole in twenty gallons of water. This quantity is sufficient to dip twenty sheep.

For internal administration arsenious acid is generally mixed with the food; but a solution of arsenic is prepared by heating together four grains each of arsenious acid and potassium carbonate to an ounce of water. Tuson gives the doses as follows:—Horses and cattle take from 5 to 10 grains, sheep 1 to 2 grains, and dogs $\frac{1}{5}$ to $\frac{1}{10}$ of a grain. The liquor as prepared above is given to horses and cattle one to two fluid ounces, sheep $\frac{1}{2}$ to 3 drams, dogs 5 to 20 minims. The liquor is always given diluted in a sufficient quantity of water to form a draught.

Lime.—Calcium oxide, Sing. *hunu*, Tam. *shunambu.* Lime is prepared by burning limestone, coral or marble. Burnt lime or what is commonly known as quicklime takes up a certain quantity of water when added to it and forms calcuim hydrate. Lime water, which is much used in medicine, is prepared by stirring quicklime in water, and filtering or decanting the liquor. When thus prepared it is a colourless inodorous liquor, possessing a peculiar alkaline taste. When lime water is exposed to air a thin film or layer is formed on the top of it consequent on the combination of the lime, with the carbonic acid gas of the air. Lime water also turns milky if the air from the lungs is blown into it.

Lime is an irritant, it has a corrosive action, it prevents acidity. Both slaked lime and lime water are used as antacids in diseases of animals, the more useful and handy preparation being the lime water. In indigestion and hoven it is given with much benefit. Young calves suffering from diarrhœa are given milk diluted with 50% of lime water with very beneficial results. In vomitting in dogs lime water often proves useful.

Externally equal parts of lime water and oil form a very useful application in burns and scalds. This mixture is commonly known as carron oil. Horses and cattle take from one to two drams of quick lime and dogs five to twenty grains. Four to five ounces lime water are given to cattle and horses and two to eight drams to calves and dogs.

Chalk.—Calcium carbonate, Sing. *ratahunu.* Pure chalk though not met with naturally here, is imported largely and is easily procured at any bazaar. It is prepared for medicinal purposes by finely powdering the crude substance and triturating in water, thereby removing the coarse particles of foreign matter which are often found with it. When thus prepared it is of a dull white colour, is porous and has an affinity for water. Chalk is very useful in the treatment of indigestion, chronic diarrhœa, and dysentery. Externally the powder may be used as a reliable desiccant for wounds.

Dose for a horse, one to two ounces: cattle, two to four ounces; dogs, eight to twelve grains. It is best given with milk or conjee. Chalk when given in large quantities should be followed by a laxative. It may with advantage be given in cases of diarrhœa with catechu, and in indigestion with ginger and coriander. In dysentry, when much pain is evinced, opium and chalk form a useful compound.

Ammonium Chloride.—Sal ammoniac, Sing. *Navasaran.* Is met with in the bazaars in a more or less crude state. It is prepared by adding hydrochloric acid to "gas liquor" and evaporating the excess of water. The salt is of a fibrous structure and has a "saltish" acid taste. It dissolves readily in water. Large doses of this drug are poisonous to animals. In medicinal doses it is a useful stimulant, it also promotes the secretion of urine and sweat and increases the action of all glands. Ammonium chloride is given with good results in fevers, pneumonia, diarrhœa, rheumatism and dropsy. Externally a solution of the drug is a stimulant to bruises and sprains; a useful cooling lotion is made by dissolving equal parts of ammonium chloride and nitre in cold water. Doses: horses and cattle take from $\frac{1}{2}$ to $1\frac{1}{2}$ ounces and dogs five to twenty grains.

Sulphate of Magnesia.—Epsom salts, Sing. *lunu* (purgative). The vernacular term for Epsom salts is the same word as is applied to any salt, but in the bazaars it is known under the name of "purgative" salts. It is found in its natural state in certain mineral waters, but is generally prepared from the mineral magnesite by treating it with sulphuric acid. The salt as found in the native bazaars is often in the form of large rhombic crystals, but sometimes the crystals are small, much resembling sugar. It has a nauseous saline bitter taste, and a cool sensation is felt when a crystal of the salt is placed on the tongue.

Magnesium sulphate is a purgative and a useful febrifuge. For cattle and other ruminants it is the best known purgative, though it is not advisable to give purgative doses of the drug to horses. In this animal it has certain ill-effects, inasmuch as it is often productive of gripe. Cattle take from one to two pounds as a purgative. Horses two to three ounces as a febrifuge.

Sulphate of Iron.—Green vitriol, Sing. *ánnáwedi.* Is met with in the bazaars in the form of green crystals. It is obtained by dissolving iron in sulphuric acid, but more frequently got in large quantities by treating ferruginous shale with the acid. The crystals of iron sulphate are of a bluish green colour and on exposure deposit a white powder.

In large doses this drug is an irritant, but medicinal doses act as a very useful tonic in debility. It is an astringent in diarrhœa, and is also given with advantage in diabetes and dysentery. Doses: horses and cattle one to two drams and dogs one to ten grains.

W. A. D. S.

LADY BIRDS.

Lady-birds belong to the family Coccinellidæ, of the order Celeoptera. They may be shortly described as follows:—Hemispherical; upper side convex; under side flattened; head small, retractile; antennæ eleven-jointed, thickened at their tips; legs short; feet apparently three-jointed, the second joint being very small; colour usually variegated, many species black with red, or red with black spots. When grasped the insects emit a yellowish unpleasant-smelling fluid from the

abdomen. The blunt, four-corned, usually variegated pupæ hang on leaves. The fully-developed larvæ are longer than the beetles; they closely resemble those of the leaf beetles, but are not so thick-set, and their longer legs stick out more laterally. They are covered with warts and little spines. The larvæ and beetles of most species feed chiefly on aphides and shield-lice; they are therefore useful. The yellow eggs are laid in heaps.

We have lately heard a good deal in Ceylon about Mr. Koebele and his Australian lady-birds, in connection with the visit of that gentleman to the Island. Through his agency the white scale (*Icerya Purchasi*) which did such damage to the apple orchards of California has been entirely eradicated by means of the lady-bird, *Vedalia cardinalis.* Professor Cook of the California University, an entomologist of repute, has lately published a report of his observations with reference to the work of the Rhizobiids—another species of lady-bird introduced by Mr. Koebele into California. The most troublesome pest in connection with orange and lemon culture is the black scale, scientifically known as *Lecanium Oleæ*, but it is now authentically announced that this pest can be got rid of through the agency of Rhizobiids —the three important species being *Rhizobius toowoombæ*, described as a small black beetle with a brown head and thorax; *R. debilis*, which is about the same size as the other but is entirely black above and below, and *R. ventralis*, which is larger, entirely black above, with short light hairs and brown below. A single pair of Rhizobiids, according to Albert Koebele's estimate, could produce 15,000,000,000 in a single year, and Professor Cook considers this, from his observations, to be a reasonable estimate. Details of the wonderful effect of the lady-birds in clearing orange, lemon, and olive orchards are given by Professor Cook, who says: I have been a hard student of entomology for thirty years, and I am free to say that it is the wise and certain policy for this great fruit state to keep Mr. Koebele in Australia for some years hunting and shipping to us more of these natural aids in fighting our insect foes.

The Pacific Rural Press likewise express its views in enthusiastic terms on this matter, thus: "The triumph of the *Vedalia* over the cottony cushion scale has been counted the most sweeping victory for entomological science, but it is now a question whether the rout of the black scale by the Rhizobiids will not indeed prove a greater victory because the area invaded by the black scales is wider . . . . . Now there seems to be demonstration which cannot be controverted, and Mr. Koebele's later achievements in the gathering and shipment of these friendly insects to California may beat his record on the *Vedalia.*

The two pests about which at present the planting community in Ceylon are exercised in mind are the green coffee bug, *Lecanium viride* and *Orthezia nacrea*, a comparatively new pest, which, however, it is apprehended, will do much damage to tea. In a communication to the *Tropical Agriculturist* for June last Mr. E. E. Green, our local entomologist, states that he is daily expecting a consignment of lady-birds from California to experiment with on the above-mentioned pests, mentioning that the two species indented for are *Novius Koebelii* and *Vedalia cardinalis.* Whether the beetles have arrived yet and what results have followed so far, we are not aware. Seeing the success with the Rhizobiids on *Lecanium oleæ* it is a pity that some of the latter were not imported for trial upon the local species of Lecanium—the green coffee bug, but no doubt Mr. Green has been well advised, and we await the result of trials with much interest.

[Since the above was written we have heard with regret that the lady-birds consigned from California were all found to be dead on reaching Ceylon.—Ed. *A.M.*]

THE VALUE OF KAINIT.

The best known and most used of potash manures is *Kainit*, a mineral deposit occurring in Germany, and consisting chiefly of chloride of potassium, sulphate, of magnesia, and water, with usually chlorides of magnesium and sodium. An average sample should contain about 13½ per cent of potash.

Dr. Fream referring to the value of potash says that light soils generally yield better crops after treatment with potash salts, and also recommends it for vegetable soils. A paper by Dr. Marloth which appears in the Cape Journal of Agriculture gives interesting details of experiments which go to show the importance of mineral fertilizers, and particularly of potash. Referring to kainit he says: "Kainit, one of the most excellent crude potash salts, is rich in magnesia compounds, which by their water-absorbing properties have a marked effect in making and keeping the soil compact and moist. It is thus exactly what is needed by light sandy soils." The writer then goes on to state that on ascertaining by analyses the relative proportions of the principal food ingredients removed from the soil by the commoner crops, it will be found that there is always much more potash removed than phosphoric acid, while all natural fertilizers as well as most artificial mixtures contain comparatively little or almost nothing of potash. To this then is attributed the fact that soil cultivated for a long time by means of natural or artificial manures, without the additional application of potash, do not give results that are expected of them. Many soils again are naturally deficient in potash and need special applications of potash manures to improve them. "It is to be specially noted," says Dr. Marloth, "that the potash supply derivable from ashes is exceedingly small, limited, and the quality so variable, that purchase is only advisable if the strength is guaranteed by chemical analysis." This writer then goes on to give details of experiments which would appear to conclusively prove that special applications of potash salts, preferably in the form of kainit, are necessary for the production of large, healthy and early crops. Kainit is also believed to be injurious to all ground-pests (including the irrepressible white-ant), and, if this can be conclusively proved, it will greatly enhance its usefulness in the tropics.

Kainit guaranteed to contain 12 per cent potash, is obtainable for about £2 per ton in England. We should be glad to see trials made with this and another cheap and useful fertilizer (Basic cinder) in the colony.

AN IMPORTANT LETTER ABOUT RHEA.

The *Agricultural Gazette* of N.S. Wales for April last publishes a letter from Mr. W. Leedham Crowe, of 10, Jeffrey's Street, St. Mary Axe, London, which contains some valuable information about Rhea from a practical source. The following is taken from it:—"For many years I have been greatly interested in the properties and possibilities of this fibre, and have examined many processes, more or less successful, for treating it. Twelve years ago I presided over a meeting in London of merchants and brokers, on which occasion fabrics of every description were exhibited, made from pure Rhea, and from Rhea mixed with wool or other fibres. It was there demonstrated by tests that in the case of fire-hose Rhea had something like three times the existing power to moisture of flax. These fabrics were all made in Angouleme from Rhea grown in Algeria, and treated, I believe, by the Favier-Renny process. The quantity grown there, however, is small, and not of the best quality. I have been interested in growing Rhea in Johore, and in its importation from China and other places.

"In India it cannot be grown successfully to pay. Undoubtedly in N.S. Wales and Queensland there are districts where it could be cultivated to advantage. The two main difficulties are, however, its decortication and the insuring a regular supply at a sufficiently low price. Where I differ from your article is the necessity for a machine to decorticate the stems. I am convinced that the cost and expense of working machinery would be too great for the value of the fibre. Some very efficient machines for this purpose have been produced, those of Messrs. Death & Ellwood among others, and which were tried in Johore, but abandoned. The simplest method of decortication appears to be the Favier process—of subjecting the cane to steam in chests for about 20 minutes, when the covering can be removed by hand, and the ribbon left free. Hitherto it has been decorticated, brought to this country in ribbons, and then treated chemically to remove the gum, but the carriage upon ribbons is very heavy, and the entire process should be carried out upon the spot where it is grown. Many processes have been patented for treating the ribbons, but the most successful appear to be the simplest—a treatment with soda and hot water. If Rhea fibre in merchantable condition can be produced in quantity and laid down in London at a moderate price, it has an immense future. A number of syndicates and small quantities have at various times been formed here to work special methods of treating the fibre. All have failed, and why? First, for want of a regular supply; secondly, because the cost of the fibre when prepared was excessive. Our manufacturers are ready to buy and use Rhea, and anxious to get it, but must have a continuous supply ensured. They will not otherwise alter their machinery, or introduce a new fibre to the market. Rhea must largely compete with cotton, which is now very low, but if the finished fibre, which packs closely, were sent home, it might do this successfully. I have at various times imported the Rhea ribbons from China at a cost of seldom much under £20 per ton delivered here, but such a price is prohibitory. If a small regular supply were ensured to commence with, and the practical use of the fibre established, a stimulus would be given to production, but until that takes place, Rhea will remain the Will-o'-the-Wisp of sanguine speculators."

CONTAGIOUS DISEASES OF INSECTS.

Insects have long been known to be subject to contagious diseases. This knowledge, however, has not been widespread, and comparatively few have considered it in its bearings on practical agriculture. That it has important bearings in this direction no one can doubt who has observed the progress of an epidemic amongst insects. None of the plagues recorded in history has ever carried such destruction in its path as to be compared with the havoc wrought by some of the common insect diseases.

The earliest known of insect epidemics was the disease known as *muscardine*, affecting most seriously the cultivated silkworm in France and Italy. This disease was easily recognised by the fact that the dead worm became in a short time covered with a whitish powder. Between thirty and forty years ago another still more serious disease was recognised in these countries and called *pébrine*. This disease at one time threatened the very existence of the silk industry of European countries. Still a third disease of the silkworm, the *flacherie*, rivalling even *pébrine* in its destructive power, was first discovered and carefully studied by the renowned M. Pasteur. The disease of the bee known as foul brood was recognised as a contagious disease fully twenty-five years ago, and has claimed, and still claims, the attention of beekeepers on account of the enormous losses it has cost. Another, quite as important as the diseases just mentioned, and one full of suggestiveness, is the disease attacking the chinch bug of the eastern United States. This disease has been known for more than a quarter of a century, but never carefully studied till during the last ten years. Who has not heard of the wonderful effects obtained by spreading the disease in Kansas, an effect as striking as the work of our *Vedalia cardinalis*.

Every one has probably noticed some examples of these contagious diseases, even if not recognizing their nature. The common house flies often seen dead and sticking fast about the window, and surrounded by a whitish halo, is a common form. Scale insects, especially *lecaniums*, covered and almost hidden by a whitish powdery substance, are commonly to be seen.

Plant lice are not uncommonly found sticking to the plant, dead and discoloured and looking much as though killed by kerosene emulsion, but when no treatment had been made. Caterpillars may often be found hanging by one leg to the plant and the whole body soft and rotten, or dried, stiff and shrivelled. In some one or another of these forms we have quite likely become acquainted with a few of the diseases of insects, but it is doubtful if any of us has a proper idea of their extent and prevalence.

These diseases are all due to the multiplication within the body of certain specific organisms, certain germs. An epidemic may be due to one kind alone or may be a number of diseases attacking the insect together. Three different kinds of organisms are known to produce diseases among insects.

1. *Protozoa*, represented by the organism causing *pébrine*. It is a very lowly organised animal, which in its growing condition is simply a mass of protoplasm of no definite shape and of microscopic size. It finally becomes spherical and motionless, and the whole interior becomes broken up into a minute mass of oval spores. The contents of each spore breaking out through one end of the spore wall and beginning to feed and grow, completes the life history of the animal. All the organs are attacked, and besides being hereditary the spores are scattered over the leaves from a diseased insect and are eaten by the others with their food and thus the disease spreads.

2. The *bacteria*, which are credited with most of the contgaious diseases of man, are also important insect parasites and may be represented by the disease of foul brood. These are very lowly organised plants, increasing almost wholly by simply separating into two equal halves, growing to full size and again dividing, and so on, though a few produce spores occasionally. The species producing insect diseases belong to the genera micrococcus and bacillus, the former spherical and the latter cylindrical.

3. The true *fungi*, such as produce the *muscardine*, are much higher developed plants, and two, or perhaps three, very distinct groups are parasitic on insects. They all have this in common, that they are composed of long threads, the mycelium, and short round or oval bodies, the spores. As a rule the spores germinate on the surface of the body; the plant burrowing its way down into the insect there grows till the insect dies, and then again passing through the skin produces the spores, which are so conspicuous on insects dying from these diseases. The spores may not be produced, or only in limited numbers, when the weather is dry or when the insect is so small as to dry up too soon. In these cases a splendid crop may be produced if the dead insect is dropped into a bottle partly filled with water.

The fact that most insects lay many times, often many hundred times as many eggs as can, under ordinary conditions, develop to maturity, is quite well understood. The destruction of the great majority of the young insects is chiefly accomplished through the attack of their natural parasites, and of these parasites the contagious diseases are by all odds the most important. My own observations at Berkeley for three years are to the effect that at least nine out of every ten deaths of such insects due to parasites are caused by some form of contagious disease. For these insects, therefore, nothing else determines the abundance or scarcity of scale insects as completely as do contagious diseases. A very little lessening of the virulence of a disease during any season will enable the scale to overrun the plants, and on the other hand a little increase in the severity of the attack will practically annihilate the scale insects. Everyone has seen examples of these conditions. I have repeatedly seen cases where a disease was particularly abundant and the decrease of scales ascribed to some useless wash or to lady-birds, when these latter were even less abundant than usual. Mistakes of this kind should never occur with a reliable observer, but are very liable to occur unless care is exercised. This is especially necessary when a new wash or insect parasite is introduced.

The relation of lady-birds to diseases is well worthy of attention. There seems to be evidence that would indicate that a great increase in the numbers of our native species of lady-birds follows or is associated with a serious attack of some form of contagious disease on scale insect or plant louse. This apparent relation between lady-birds and disease of the food of lady-birds, coupled with the fact that the relatives of the lady-birds are fungus eaters and that the lady-birds themselves were once undoubtedly also fungus eaters, suggests very strongly that with some species at least disease of the food is necessary to great lady-bird increase.

Another point in reference to diseases must also be considered. There must be some means of conveying the germs of a disease from insect to insect. While the scales are active there appears to be sufficient means for the spread of the disease. It it a fact that the largest number usually die soon after settling and have apparently become affected while active. Those that have escaped the infliction up to this time, however, would seem to be very unpromising subjects for the disease, both by their freedom from contact and on account of their special means of protection. Now, it would seem that lady-birds serve a very important function in the spread of the diseases. Any one who has observed the actions of a lady-bird either while it is a larva or an adult will have noticed that it does not settle down and devour each scale it comes in contact with; instead, it has the habit of moving restlessly about, nibbling here and there and only now and then taking a full meal. A better arrangement for spreading diseases could not be desired than this habit of the lady-bird. Indeed, the relation of the ladybird to contagious diseases opens a wide field for study, and at the present time I know of none in the whole range of applied entomology more interesting and of more practical promise.

DAIRY PICKINGS.

The Colonial Veterinary Surgeon of Cape Colony writes with reference to the occurrence of blood in cows' milk:—If it is real blood there must be rupture of some small blood vessel in the glands of the udder. If it is merely a bloody-looking sediment which appears in the milk especially at the bottom, there is some diseased condition of the ducts of the gland. It would be as well to ascertain first, whether it is in one or more quarters of the udder; this could easily be done by milking each teat into a separate vessel, and if it is found to be in one only, the milk of that teat could be thrown away, and the milk from the others used. Regarding treatment, I would recommend that the cow be kept in the house or in a small camp where she would not be hustled about or have to walk too much, and relieve the udder by milking her thoroughly dry three times a day. Examine the udder carefully after it is milked out, and if there is any undue hardness or stiffness about any of the quarters, bathe it with warm water after each milking and rub on some fat or oil over the affected quarter immediately after. Rub the udder with a pressing motion in a downward direction.

"We never could fathom the inwardness of the practice of wet milking. No milker we ever met could give a satisfactory reason for adopting the habit. Every milking we ever examined in which this method was adopted had a decidedly cowy odour that was not present when the herd was dry milked. The habit of the wet milker in placing his fingers in the milk, or squirting the fluid on them direct from the cow, is an all-sufficient cause for the odour. Such milk is unclean, and no treatment that can be applied to it can sensibly alter its character. A person afflicted with the wet milking habit, for it is a grievous affliction, should be scrupulously neat concerning the things he handles at milking time. A thorough washing of hands should be a cardinal requirement with him previous to beginning the operation of milking, and a vessel containing clean water to moisten the fingers, should be among the chief requisites of the proceeding. Better still, abandon the nasty method by learning the cleanly dry way of milking. The latter has the advantage of leaving the teats uninjured by chaps in cold weather, as well as relieving the milker of the suspicion that he is in some degree responsible for the offensive odour in the fluid. The matter of chapped teats in winter is one that is a trouble to the cow and milker. When the latter is of the wet sort the chap trouble is constantly augmented, for the reason that the cause for it is reinforced at every milking until the cow becomes fractious at such times, and gives an inferior yield in quantity and quality. Wet milking has always been in our thought as filthy milking, and it is barbarous withal. Cows dry milked can be stripped easier and better than by the other method of milking. In a dark stable during the winter, the accidents possible to milk, when the cow is handled by a wet milker, are too suggestive to require description. The best that good care and feed can accomplish can be overcome by the foulness that is inseparable from wet milking."—*Diary Review.*

We read in the Cape Journal of Agriculture that there is nothing to equal tobacco water (using about 2 oz. of tobacco) for animals puffed up with gas (hoven). The tobacco solution should be given in 3 or 4 doses.

The *Dairy Review* draws attention to the trouble that can arise from rusty cans in dairies. Thorough rinsing out with warm water or steaming will not remedy the evil to which special attention must be paid. Milk carried in rusty cans are said to acquire a "beastly smell and a tallowy taste," which even cling to the butter made from the milk. Analyses of milk kept in such showed it to contain "a considerable amount of iron," which we have little doubt must be hurtful to those (particularly young children) who consume the milk.

A cheap and successful remedy for sore teats is zinc ointment, which should be always kept in a dairy.

CAMPHOR.

Camphor is a concrete volatile oil found in different species of plants, and especially those of the Lauraceæ order. Camphor of commerce is chiefly obtained from the Cinnamomum Camphora. This plant is also known as Camphora officiarum and Laurus camphora. The camphor laurel is a tall tree with smooth-handsome evergreen leaves; it is much branched and bears small yellow flowers. It is largely met with in China, Japan and Formosa. The wood and leaves of this tree contains the volatile oil which forms the camphor. Most of the camphor imported to Europe is the produce of Formosa; Japan stands second and China third in this respect.

Camphor is prepared by the dry distillation of the chips of wood of the camphor tree. The distillation is carried on by boiling the chips in water contained in wooden vessels and allowing the steam to pass through vessels containing straw dipped in water. The volatile camphor as it passes crystallizes among the straw from whence it is collected. This forms the crude camphor of commerce. The best camphor and the largest quantity is obtained in Japan from trees growing close to the sea, the sea air exerting a beneficial influence in the production of the article. Crude camphor is purified by a process of resublimation, in this the object being to have as much interstial water in the camphor cake as possible. The crude camphor is mixed in the proportion ¼ to 2½ of water, and is heated in a copper vessel which is kept cool by dashing cold water on to it; after about three hours' heating the vessels are opened, and camphor deposits in the form of small cakes found on the sides of the vessel are taken and thrown on to cold water. In Europe camphor is refined in quite a different way, and at one time this process was a secret in the possession of Hollanders, but refineries are now met with in all parts of the continent and in England and America. Crude camphor is mixed with 3 to 5 per cent of slaked lime and 1 to 2 per cent of iron-filings. This mixture is introduced into a series of flasks made of glass, placed on a sand bath and heated by means of metal plates without directly introducing fire, the heating going on for about forty-eight hours. The flasks are then removed from the sand bath and broken by spinkling cold water on them, when large cakes of camphor formed in the flasks are removed.

India imports about six lacs worth of camphor from China and Japan.

There are two other important plants which yield camphor, viz., the Dryobalanos camphora of Sumatra and the Bhemea balsanifera of China.

W. A. D. S.

COMMON MORTAR.

(Concluded.)

The third and last ingredient used in the preparation of mortar is sand. The word sand is generally used in a very wide sense, and is applied to any kind of rock or mineral matter in a fine state of division, or to any earthy matter containing a fair admixture of silica. Sand, however, is strictly speaking, pure silica, or oxide of silicon—and its

chemical formula is $Si. O_2$. In a free state as well as in combination (as a constituent of rocks and minerals) silica forms about half of the solid matter of the earth. It occurs free in nature in two chrystalline forms as quartz and tridymite, and in the amorphous state as opal. Calcedony, flint and agate are mixtures of amorphous silica with quartz and tridymite. The aluminium, potassium, calcium and iron silicates mixed in different proportions constitute a large number of minerals. The sand used in the preparation of mortar though not quite free from impurities is almost pure quartz sand or silica. Sand is mixed, with mortar to distribute the contraction caused by the slaked lime imparting with the water with which it is combined or mixed and becoming converted into carbonate of lime. The presence of sand in mortar thus prevents, to put it in a practical way, cracks and inequalities in the plaster when it dries. Besides this, it is believed that the silica also gradually combines with lime and that silicate of lime is thus formed, which tends to increase the hardness of mortar as it sets. When evenly and carefully applied to a stone structure, after wetting the bricks in order that they may adhere the more fimrly by the mortar, soaking into the pores of the bricks, the adhesion caused by good mortar is astonishing. There are various opinions as to the superiority of some qualities of sand over others. River sand for instance is very generally considered to be the best for preparing mortar, but sea-sand is more commonly used, probably, for one reason, because it is more convenieutly obtainable. The practically pure sandy deposits that occur in some situations (geologically, no doubt, old river beds or former tidal areas of the sea) are considered by some to be quite suitable for the purpose of mortar, though others insist on the sand coming fresh from the sea or rivers. Excellent samples of mortar are prepared by grinding down the white sand from these dry-land deposits, and a beautiful marble surface produced on walls by polishing the mortar after application with a smooth rock-crystal. In the preparation of this special mortar, lime made from shells is used.

Ordinarily, coral lime is preferred to lime prepared from lime-stone.

In mixing mortar it is advisable to use two parts of sand to one of lime, for setting bricks in buildings that are required to be particularly substantial; for ordinary brick work and plastering, $2\frac{1}{2}$ of sand to one of lime may be used. But on these practical points I would rather not say anything authoritatively. My endeavour, in this paper, has been to tell you something about the chemistry of mortar, and I trust I have explained my subject with tolerable clearness.

RHEA (RAMIE) AND CHINA GRASS—A DISTINCTION.

In a note on Rhea Fibre by Dr. Watt, in the *Agricultural Ledger Series*, he states that it was Roxburgh who first pointed out certain differences between the plants, called by the above names, as they were grown in China and in India. Other botanists following him also attempted the separation of the two forms. Modern writers, however, regard these as only varieties of a common species. A few years ago Dr. Watt himself in the first volume of his Dictionary of Economic Products, pointed out that whatever views botanists might ultimately uphold, there was a practical consideration of the greatest value that hinged on the controversy. This may be here briefly stated, viz., that the plant that yields the true China grass is met with in cultivation in tracts of country that have a sub-temperate climate, while the Rhea—that is to say, Malay and Bengal stock—occurs in moist tropical regions. The latter is, moreover, a more robust plant, has longer and narrower leaves with white tomentum on the veins of the under-surface only; while the former has large broad leaves with the base subcordate, concate and densely coated below with adpressed white hairs. Now, if this distinction holds good, it would obviously be a mistake to attempt the cultivation of the temperate-loving plant in the tropical plains of India. From time to time fresh supplies have been imported from China and distributed all over this country, so that India may fairly be characterised as having fully attempted the acclimatisation of the China grass, but done little or nothing towards endeavouring to extend the production of what (for the sake of convenience of expression) we may characterise as its indigenous stock. On this subject Mr. W. T. Thiselton Dyer (Director of the Royal Botanic Gardens, Kew) has written :—

"The point raised by Dr. Watt from the botanical point of view, has been dealt with by Sir Joseph Hooker in the Flora of British India. The further distinction in adaptability to climatic conditions, which chiefly concerns planters, has been observed in nearly every part of the world where these plants are grown for fibre purposes. The Ramie or Rhea, properly so called, may be looked upon as the tropical representative of the China-grass, and it is on that account probably better adapted for cultivation in hot and moist countries. Under such conditions it is a very robust plant and yields valuable fibre.

"Whether this fibre is at its best really as good as the best China-grass (*Boehmeria nivea*) is a point that appears not to have been definitely settled. It may turn out to be simply a question of soil or climate. At Kew we find we cannot successfully grow *B. tenacissima* in the open where *B. nivea* itself remains in the ground all the winter, and furnishes in the summer a large crop of vigorous stems. The China-grass may, therefore, give a larger and better supply of fibre under cool conditions, whereas the Ramie or Rhea may do equally well under essentially tropical conditions. The question as regards India may be settled by cultivating under various conditions of climate and soil authentic specimens of each plant, and by instituting, as suggested by Dr. Watt, a careful chemical and microscopic analysis of the fibres yielded by Indian-grown plants of what are known to be the true *Boehmeria nivea* and the true *B. tenacissima*."

GENERAL ITEMS.

The *Mark Lane Express* thus refers to the value of seaweed as a manure :—Seaweed decomposes very rapidly and should either be applied fresh as a top-dressing or ploughed in at once on arable land. It also makes an excellent compost with any vegetable refuse, ditch parings, peat, mould,

etc. The quantity of water which the fresh weeds contain will always restrict its use to land near the coast. It is too bulky in this state to cart far inland, but when partially dried before removal, this objection is in some measure overcome. In this way it is said to be largely dealt with on the west coast of Ireland, the fishermen collecting and half drying the seaweed by exposure to the air, and then selling it to farmers to be carted inland as a dressing for their fields. There can be no two opinions as to the value of seaweed as a green manure, containing as it does all the substances required for the growth of either cereals or green crops. Its ash is rich in salt, potash, sulphuric acid, and phosphate of lime. In fact, chemists tell us that this product of our shores contains at least twice the quantity of these valuable matters as the plants which are ordinarily grown by farmers as green manures. When, therefore, it is intelligently used so as to conserve in addition its most important nitrogenous constituents, seaweed is a fertiliser which is not easily beaten. Consequently, those who are fortunate enough to farm within easy reach of the coast will be very unwise if they neglect to avail themselves of such a valuable manure. Farmers so situated may well betake themselves to the "harvest of the sea" after the harvest of the land is safely gathered in.

It is claimed by those who offer kainit in the market, that the manure is death to all insect life—grub, white-ant, cutworm, &c., &c., and that it is of more importance from a manurial point of view than it is generally considered to be. Indeed, a number of experiments carried ont at the Cape have gone to show that when added to farm-yard mauure, guano, and other practically perfect manures, it has a wonderful effect. Kainit is comparatively cheap, and some experiments with it might with advantage be carried out in this country.

The chocho appears to be making satisfactory progress in N.S. Wales. The Editor of the *N.S.W. Gazette* draws attention to the fact that the plants may with advantage be allowed to remain in the ground till they shoot up the second season. After the second season it is recommended that the root should be carefully removed, when it will be found that a large tuber has been formed, somewhat jelly-like in appearance when cut, which can be utilized either by boiling as a vegetable, or fed to pigs, for which purpose it is considered particularly valuable.

It would appear, from the result of a trial shipment of passion-fruit that no very certain or remunerative trade in the article could be expected in England.

We hear of the successful treatment of horses affected with ticks, fowls with lice, and other animals with either of these pests or with scab, by means of sulphur administered internally. The results would appear to be quick and effectual, and the treatment worth trying, but the doses much be regulated and not given at random.

Dr. Patterson, in the *Gardeners' Chronicle*, has recently advocated the cultivation in England of the "aubergine" more commonly known amongst us as the "Brinjal," partly on the ground of its being "an excellent remedy for those suffering from liver-complaints."